DOCUMENT RESUME

ED 087 742 SP 007 726

AUTHOR	Gentry, Castelle; Johnson, Charles
TITLE	A Practical Management System for Performance-Based Teacher Education. PBTE Series No. 15.
INSTITUTION	American Association of Colleges for Teacher Education, Washington, D.C.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	Feb 74
NOTE	59p.
AVAILABLE FROM	Order Department, American Association of Colleges for Teacher Education, Suite 610, One Dupont Circle, Washington, D.C. 20036 ($3.00)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Management; *Management Systems; *Performance Based Teacher Education; *Systems Approach; Systems Concepts; Teacher Education; Teacher Programs

ABSTRACT

The authors begin by describing difficulties in educational management systems and list three conditions essential for any performance-based teacher education management system: a) there must be a clear discrimination between the values of management systems operators and the management tools and processes; b) objectives and operations of the management system must be clearly specified and these conditions must be set up so that all management decisions are gauged against those objectives and operations; and c) changes in the objectives and operations of that management system should be on the basis of feedback regarding the system's effectiveness. The authors then state that there is a need for a unique management system for PBTE because it is evaluated by primary criteria. Other special needs requiring a special system involve procedures for designing, installing, maintaining, evaluating, and revising the program. Management functions, components, and their relationship are defined. Also listed and discussed are four principles of PBTE management: successive approximation, selective negligence, structure-induced practice, and accumulative feedback. In addition to 10 pragmatic rules of program adoption or "heuristic" for PBTE (including rules such as "work within the rules of existing management systems whenever possible"), a detailed model for PBTE management structures and an evaluation model are presented. (JA)

ED 087742

A PRACTICAL MANAGEMENT SYSTEM FOR PERFORMANCE-BASED TEACHER EDUCATION

by Castelle Gentry
Associate Professor and Chairman
Department of Educational Media
and Technology
University of Toledo
Toledo, Ohio

and Charles Johnson
Department of Elementary Education
University of Georgia
Athens, Georgia

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

for the AACTE

Committee on Performance-Based Teacher Education

February 1974

American Association of Colleges for Teacher Education
One Dupont Circle
Washington, D. C. 20036

SP 007 756

This paper was prepared pursuant to a contact with the United States Office of Education, through the Texas Education Agency, Austin, Texas. The opinions expressed herein should not be construed as representing the opinions of the United States Government or the Texas Education Agency.

Library of Congress Catalog Card Number: 74-75838

Standard Book Number: 910052-81-6

Preface

The American Association of Colleges for Teacher Education is pleased to publish this paper as one of a series sponsored by its Committee on Performance-Based Teacher Education. The series is designed to expand the knowledge base about issues, problems, and prospects regarding performance-based teacher education as identified in the first publication of the series on the state of the art.[1]

Whereas the latter is a declaration for which the Committee accepts full responsibility, publication of this paper (and the others in the PBTE Series) does not imply Association or Committee endorsement of the views expressed. It is believed, however, that the experience and expertise of these individual authors, as reflected in their writings, are such that their ideas are fruitful additions to the continuing dialogue concerning performance-based teacher education.

One of the challenges of implementing a PBTE program is to develop effective arrangements and procedures for designing, producing, installing, and maintaining the program as a whole as well as its several parts. This task is complex because it involves giving attention to a number of elements which are germane to the nature of PBTE. The authors identify four basic implications of the performance-based concept:

1. individualized curriculum
2. interdisciplinary approach
3. functional communication and data-handling system, and
4. strong supporting field component

and argue that a management system must deal effectively with these and numerous other program elements and characteristics. Writing from their experience at the University of Toledo and the University of Georgia respectively, the authors present in this monograph one approach to the effective management of PBTE programs. The Committee believes that the authors have made a significant contribution to the literature on PBTE and to AACTE's PBTE Monograph Series.

AACTE acknowledges with appreciation the role of the National Center for Improvement of Educational Systems (NCIES) of the U. S. Office of Education in the PBTE Project. Its financial support as well as its professional stimulation, particularly that of Allen Schmieder, are major contributions to the Committee's work. The Association acknowledges also the contribution of members of the

---

[1]Elam, Stanley, Performance-Based Teacher Education: What Is the State of the Art? The American Association of Colleges for Teacher Education, December 1971.

Committee who served as readers of this paper and of Annette MacKinnon who provided technical assistance in editing this paper. Special recognition is due J. W. Maucker, former chairman of the Committee; Lorrin Kennamer, current Committee chairman; David R, Krathwohl, member of the Committee and chairman of its task force on publications; and Shirley Bonneville, member of the staff for their contributions to the development of the PBTE Series of monographs.

Edward C. Pomeroy,
Executive Director, AACTE

Karl Massanari,
Associate Director, AACTE,
Director, AACTE's Performance-Based
Teacher Education Project

Introductory Note

For those interested in developing a performance-based teacher education program, one of the most serious problems is how to make the changeover from their current program. The difficulties involved in redirecting the talents, energies, and, perhaps most important of all, the commitment of facilities are substantial. In addition, such eminently desirable features as individualization of instruction raise difficult problems because of the inflexibility of the college or university structure in which the professional education program is embedded.

The Committee is aware of the complexity of these and other difficulties in installing and managing PBTE and so has sought to provide help in these monographs in different ways. Using the case study approach, one of the first monographs, "Changing Teacher Education in a Large Urban University," showed how PBTE was being installed at the University of Washington and offered some generalizations.

Later, Monograph #8, "Performance-Based Teacher Education Programs: A Comparative Discription," assembled the experiences of thirteen programs and added to the generalizations. We thought it appropriate to take the next step to a still more generalized model of installation and management which would also convey both the conventional and unconventional wisdom on this topic. Such information would be valuable to large and small institutions alike. This is the intent of this monograph.

PBTE is sometimes defined as the application of the systems approach to teacher education. Thus it seemed reasonable to turn to persons working with this approach to write it. Castelle Gentry in his experiences at the University of Toledo, and Charles Johnson, in his work at the University of Georgia, have rich background in their own programs to draw upon.

Some readers may think some of the formulations overly complex for what they expect to try to accomplish in small institutions, and indeed they may be. Some may feel that what is stated is obvious. Yet it is the selection among the equally obvious alternative options that distinguishes the successful installer from the less successful one. Both new *and* experienced administrators will find it interesting to read conventional administrative wisdom dressed up in new clothes as "the principle of structure-induced practice," "the principle of selective negligence," "the accumulative feedback effect principle," and especially the section on "Heuristics of PBTE Management."

Looking ahead in the series, we hope to bring additional information to bear on the problem with at least one more case study which would show one of the more sophisticated programs that has developed. We hope readers are finding these materials helpful and will send us suggestions for improvement, aspects we may have overlooked, and examples or models that would provide important help to others.

David R. Krathwohl, Member of the
PBTE Committee and chairman of its
Task Force on Publications

A PRACTICAL MANAGEMENT SYSTEM FOR PERFORMANCE-BASED TEACHER EDUCATION

Contents

	Page
Preface	*iii*
Introductory Note	*v*
Introduction	1
Advance Organizer	1
The Bad News about Management	1
Conditions for PBTE Viability	2
A Rationale for Presenting a PBTE Management System	3
Constraints on Teacher Preparation Institutions	4
Implications of the Performance-Based Concept	5
A Management Frame	6
Management Functions	7
Management Components	7
Relationship between Functions and Components	8
Operational Principles	9
Principles of PBTE Management	9
The Principle of Successive Approximation	9
The Principle of Selective Negligence	10
The Principle of Structure-Induced Practice	12
Digression Time	12
The Accumulative Feedback Effect Principle	13
Heuristics of PBTE Management	14
The Vital Roles of Continuous Assessment and Revision	18

	Page
Program Interfaces with Related Systems	19
A Model for PBTE Management Structures	20
The Coordination Agency	20
Allocation of Resources	20
Policy Making and Legitimatization	21
Distributing the System's Rewards	22
Interfacing with External Systems	23
Maintaining Subsystem Interfaces	23
Interdisciplinary Instructional and Instructional-Development Teams	25
Independent Assessment Teams	26
Preservice and In-service Instructional Laboratories	27
Evaluation Model	29
A PBTE Assessment and Revision Model	29
An Ideal Evaluation Model	30
Evaluation of Student Progress	32
Storing Information of Student Progress	33
Overview of Evaluation Procedures	35
PBTE Budgeting and Cost Analysis	35
A Strategy for Requesting Resources	36
Final Note	37
Bibliography	38
Appendices	39
ABOUT AACTE	45
AACTE BOARD OF DIRECTORS	47
ABOUT THE TEXAS TEACHER CENTER PROJECT	48
AACTE SPECIAL SERIES ON PBTE	49
AACTE ORDER FORM FOR OTHER RECENT AACTE PUBLICATIONS	51

A PRACTICAL MANAGEMENT SYSTEM FOR PERFORMANCE-BASED TEACHER EDUCATION

Introduction

Advance Organizer

If you find yourself nodding in agreement as you read the next few paragraphs, we think that the PBTE management systems described in the following pages may prove useful in defining and refining your own management system. If you find yourself disagreeing and amazed at the illogical thinking and naivete of the authors, then you may want to read on for the purpose of gaining information that will help clarify why this management system, to paraphrase, "has been tried and found working."

The Bad News about Management

Conventional educational management is often accused of finding exact solutions for inexact problems, and not always without reason. Despite all of the shared experience and endless research, we continue to operate our educational systems without commonly accepted agreements about what the process of teaching should entail or what skills and knowledges are essential to teaching. The uncertainty generated by this state of affairs has put educational organizations and their management systems in the untenable position of operating without clear criteria for evaluating the outcomes of their systems. To illustrate the point, let us assume that the agreed purpose for most teacher preparation institutions is to prepare teachers to establish learning conditions so that their students learn relevant knowledges and skills, both effectively and efficiently. The relevancy question alone has produced large numbers of deadlocked camps between and within teacher preparation institutions. Attempts to establish effectiveness are constantly running up against the contention that those things that can be measured probably aren't worth measuring, and there are many educators who behave as though efficiency should not be required in academe.

If educational management systems are placed in the position of not being able to use the primary criteria of relevancy, effectiveness, and efficiency *as their programs relate to student learning*, they still must find some way of justifying their activities. A close examination of educational institutions easily reveals where the pay-offs for faculty are, and they are seldom connected with student learning. Promotion, tenure, and salary decisions are almost always dependent on secondary criteria. In the public and parochial schools, rewards are related to discipline, reports handed in on time, how well extracurricular responsibility is carried out, the number of college credits taken since the last evaluation, the number of years in the school system, and the number of parental or student complaints. In higher education, research, publications, committee work, administrative accomplishments, and grantsmanship are major criteria for obtaining promotion, tenure, and salary increases.

To compound these unfortunate conditions, educational management systems, like any other, are subject to the usual organizational frailties. Organizations are almost anthropomorphic in the accumulation of routines and defensive mechanisms for their perpetuation. Often, very straightforward management tools that are adopted "temporarily" to deal with some transitory problem are formalized. They may remain even after changing conditions render them inappropriate or inefficient. Other management tools or processes, because of routinization, formalization, and the lack of sufficient entering skills of replacement personnel, change functions of those tools and processes from legitimate means to inappropriate kinds of ends.

The management systems subject to these kinds of forces often result in confusing combinations of rigid, outdated regulations unrelated to primary criteria. At the same time, strangely enough, these regulations are flexible in incorporating almost any externally funded program and, of course, able to delete such programs when funding is stopped. That such conditions are not ideal for encouraging a PBTE program, or any other innovative program, is an understatement.

Conditions for PBTE Viability

The foregoing was not presented for the sake of decrying the sad state of conventional educational management, however reasonable it might be to do so, but to give credence to three conditions that we think are essential for any PBTE management system that hopes to respond to the relevancy, effectiveness, and efficiency criteria.

First, there must be a clear discrimination between the values of the management systems operators, and the management tools and processes. From this point of view, the clear specification of values is prerequisite to the specification of objectives. Management's raison d'etre is the values held by the legitimizers of the system. As is the case with objectives, the precise specification of values is difficult. As a result, the values that supposedly control the use of management tools are vaguely or ambiguously stated, or, in many cases, the more important ones are not stated formally at all. Analogously, when a doctor uses a scalpel and surgical procedures, he is using management tools and processes. But, *what* he cuts and *where* he cuts depends not only on his skill but on his values and those of the organization he serves. One set of values saves lives, another could make a nightmare of human guinea pigs in a concentration camp. We understand, from having tried, that value clarification and specification is difficult and complex. It is even more difficult to get consensus on values, but the alternative is to sail the ship without a rudder. Very likely, and perhaps for some time, we will continue to settle for second-order agreement, but even this level of agreement will do much toward preventing management tools and techniques from becoming ends.

Second, it is important that the objectives and the operations of the management system be clearly specified, and that conditions be set up so that all management decisions may be gauged against those objectives and operations.

Third, changes in the objectives and operations of that management system should be on the basis of feedback regarding the effects of the management system. The feedback should be identified as to its source and its level of dependability. There are times when we must make decisions on the basis of an insufficient sample, but there is a need to be clear that such is indeed the case, so that we can relate the effect of that decision to succeeding decisions.

If we use history as our guide, it would appear that these management conditions are seldom met with any consistency. As you study the management model about to be presented, note the continued emphasis on *visibility*, *adaptability*, and *value separation*.

A Rationale for Presenting a PBTE Management System

If you have read this far, it is likely that you are already aware of some of the unique features of performance-based education programs which require a management system different from those used for other educational programs. Not the least of these unique features is the fact that a performance-based program is evaluated by primary criteria--that is, in terms of the program's effect on student behavior. Until now, with the exception of a few relatively new programs, management systems for teacher preparation programs have not been designed to use primary criteria to determine the program's relevancy, effectiveness, or efficiency.

Most of us would agree that changing a conventional teacher preparation program to a PBTE program would require:

1. a means for gaining acceptance of the performance-based concept by those affected,
2. a procedure for designing the PBTE program,
3. a procedure for producing the program,
4. techniques for installing the program,
5. procedures for maintaining the program,
6. mechanisms for evaluating the effects of the program on student behaviors, and
7. procedures for revising the program on the basis of objective feedback.

If one examines conventional management systems of teacher preparation institutions, not surprisingly, once the program is in complete operation it is found that almost all energies go into maintaining the program, with little formal concern for the other six components. Unlike conventional programs,

PBTE programs require a management system that makes continued provision for all seven of those components. We will elaborate on the reason for this difference shortly.

In addition, there is a need for a PBTE management system that is compatible with conventional management systems of the institution which houses the teacher preparation program. There is a need for a PBTE management system that neither conflicts with the broader system nor is patched onto the existing management system, but one which can become a functioning structural component of a variety of different conventional management systems. We think that the system described here is a reasonably high level approximation of such a PBTE management system.

Finally, and most challenging of all, there is need for a management system that can succeed in installing and operating a PBTE program without depending on funding external to the existing funding levels of most conventional teacher preparation institutions. The integrative PBTE system that we are presenting has a number of *energy-conserving factors* which make reasonable the possibility that a school may move into a competency-based program without external funding from government or foundation sources.

Constraints on Teacher Preparation Institutions

There are several major constraints that must be overcome by a PBTE management system. As implied in the previous paragraph, most teacher preparation institutions can't depend on the necessary external funding needed to implement a classical systems approach. Therefore, the management system must be able to adjust to the existing resource level of a particular institution, without losing effectiveness.

Given an analysis of the tasks necessary to develop, implement, and revise a PBTE program, and an analysis of the skills available among the average institution's faculty, it is usually found that many of the necessary skills for carrying out a PBTE program are lacking, or at best rudimentary. Tenure and other restrictions limit the replacement of personnel with limited skills. Even if sufficient numbers of individuals having the skills could be found, it is not likely that an institution could afford to hire them. The management system, then, must depend primarily on existing faculty members, and it must establish conditions which will make it possible for the faculty members to acquire the necessary additional skills.

Usually, teacher preparation institutions are not autonomous entities. They maintain interfaces with a number of related systems. If those systems are not competency based too, there will be conflicts at their point of interface. Grading is an example of an interface conflict. The university may be set up to report student effort by A-B-C letter grades, using either a normal distribution or an arbitrary standard. But, a performance-based program is criterion referenced, and needs to report "go," or "no go." That is, a student has the competency or he does not have the competency that will allow him to deal with succeeding competencies.

Budgeting is another example where a competency-based program may conflict with procedures of the mother institution. The large majority of institutions have incremental budgets whose base sums, allocated in the past, go largely unchallenged, but whose increment paradoxically is justified on the basis of some need tied to the unchallenged base. A competency-based program, on the other hand, is under the unique constraint, with its clearly defined and related tasks, of requiring rather precise resources in order to bring students to the desired competency levels. A PBTE program management system must deal effectively with these and numerous other interface conflicts.

Implications of the Performance-Based Concept

The performance-based concept has four basic implications:

1. individualized curriculum,
2. interdisciplinary approach,
3. functional communication and data-handling system, and
4. strong supporting field component.

1. A given is that performance-based programs require students to demonstrate mastery of learning behaviors by meeting explicit performance criteria which are matched with explicit performance objectives. Integral to this condition is that students must master prerequisite behaviors before going on to succeeding behaviors.

If students are not permitted to advance until they have mastered prerequisite behaviors, and since students vary in the length of time required to master a particular behavior, it is unreasonable to expect them to progress at the same rate. Therefore, mass lockstep instruction is not a reasonable alternative. One of the implications of the performance-based concept for management, then, is that the *curriculum must be individualized.*

2. Implicit in the above statement is the view that learners also vary in the kinds of strategies they apply to the learning of a specific concept. While it is evident that many behaviors can be learned through a self-instructional process, the state of the art is such that behaviors in the higher levels of taxonomic categories, such as synthesis and evaluation, require the multibranch capability of verbal interaction between and among faculty and students. If this is true, then the skills required of a teacher or instructional manager in a performance-based program are different both in degree and kind from those required in a traditional program where exposition by authority has been the primary mode.

To illustrate, if an instructional manager is to set up optimal learning conditions for students, he must be able to determine their preferred learning styles and either develop conditions that complement that style or train the student to use different styles that agree with the instructional system. Secondly, given that the instructor's personal interaction with the student will now be primarily concerned with the higher levels of the taxonomic

domains, the kind and range of student reactions will require a much greater subject-matter depth on the part of the instructor than is required in other programs where the student's focus and response could be more narrowly controlled. It is doubtful that the individual instructor would possess the plethora of skills and knowledges required to effectively set up and manage the conditions of learning implied by the above requirements. Therefore, *an interdisciplinary approach will be required*, suggesting team management of instruction.

3. Some undesirable aspects which most of our teacher preparation institutions hold in common are the isolation among courses and the faculty who teach them, faculty and student inaccessibility to information when they need it, and the absence of clear specification of course expectations and requirements. Such conditions are antithetical to the performance-based concept. In a performance-based program, what happens in one part of the program can directly affect other parts of the program. Succeeding skills and knowledges depend upon prerequisite ones, and the presence or the absence of a particular learning experience can have a marked affect on the student's learning. The synchronization of the parts of the performance-based program *require a functional communication and data-handling system* that will provide the necessary information to individuals when they need it.

4. Finally, the nature of the performance-based concept is such that learning effectiveness cannot always be determined through paper and pencil evaluation instruments. To illustrate, if the skill or performance being taught is the use of inquiry techniques in teaching children, the only way to determine whether a student can use inquiry skills effectively is to have him perform with an appropriate group of students. Since there are such a large number of performances of this nature in a teacher education program, *it is necessary to have a strong supporting field component* in the performance-based program.

To say that a performance-based teacher education program must meet these requirements is obviously an interpretation of the concept, but it is a foolish system that does not contemplate its own future. The assumptions and implications listed thus far are not only logically oriented, but obviously value oriented as well. Our own experiences and those of most others that have been shared with us tend to support the orientation presented here. At this point in the evolution of the performance-based concept, probably the most important thing that the discussion of such interpretations can do is to make visible the issues surrounding our important business. However, the primary purpose for doing so here is to provide a context for examining the several elements of a PBTE program management system.

A Management Frame

If we can indeed agree that all management is responsible for insuring that the processes it controls are relevant to the program's intent, and that those intents be accomplished effectively and efficiently, then it becomes difficult to disagree that a systematic approach to management is

essential. There exists, primarily in the literature, a wide variety of systematic program management models (refer to the bibliography). Superficially they may vary as to the name and number of functions and components included in each, but it requires no great systems or management expertise to see that they are only slightly different forms of the same thing. Whether one expands on those models or collapses functions and components doesn't matter a great deal. Therefore, we want to emphasize the lack of sacredness of the systems frame that we are about to present. There are many parts of this model that must be held relatively constant if it is to work, but the specific functions and components described herein can be varied to fit an institution's particular circumstances. We chose this frame only to provide a common referent for the more critical factors in the model. The management functions that we have chosen are those that can be found in most management texts. By the same token the management system components should be familiar to those who follow systems literature. Briefly, we need to consider common meanings for these functions and components, before continuing.

Management Functions

Below are very brief definitions of the five management functions. We suspect that your meanings do not vary greatly from ours, but let us be sure.

Planning: Any method of thinking through acts and purposes beforehand. Operationally, it might mean to investigate, gather, review, evaluate, or filter data.

Organizing: A process for assigning specific individuals to specific tasks, and providing a system for securing disciplined action.

Controlling: A process for comparing an actual outcome with a planned outcome. Controls facilitate the early discovery of deviations from a plan and provide information for the analysis of the extent and cause of the deviation.

Coordinating: The process of keeping the faculty and students informed, and of delegating responsibility and authority for carrying out tasks.

Appraising: A process of determining the quality of student or faculty behavior, of a particular operation, or of overall results, all in terms of prespecified objectives.

Management Components

After we have provided you with equally brief meanings for the seven components of our management system, we will relate the functions just listed to

those components.

Adoption: The process for getting agreement from legitimizers and decision makers to incorporate an innovation into an educational system.

Design: The process of analyzing and determining appropriate alternatives for incorporating the innovation into an educational system.

Production: The process of developing the instructional materials for the alternatives.

Installation: The process of initially incorporating the new instruction or process into the educational system.

Operation: The continued maintenance of the new instruction or process in the educational system.

Evaluation: The process for collecting data and providing feedback on the system's relevancy, effectiveness, and efficiency.

Revision: The process of modifying deficient parts of the program on the basis of evaluative feedback.

Relationship between Functions and Components

Given the meanings just stated for functions and components, an easy way to show their relationship would be to consider the effect of the functions on *one* of the components, say Design. All of the functions would be applied to Design. That is, we would agree that it is necessary to *plan* for Design, to *organize* for Design, to *control* for the Design process, to *coordinate* the Design process, and to *appraise* the Design process. One can see the advantage in systematically applying each of the functions to each of the components. To plan such applications is systematic thinking; to carry out such applications is systematic management. The latter is much more difficult.

Each of the functions and components just described has its own special techniques and processes, many of which are already familiar to you. Space does not allow us to deal with those techniques and processes, except when necessary to explicate the model. However, any garden-variety management or systems text will contain a reasonable explanation of most of them. For those who wish more depth we have included several excellent references in the bibliography.

Keeping in mind the management frame that the functions and components create, let us turn to four principles whose application *is vital* if institutions are to develop a performance-based teacher education program under the constraints described earlier.

Operational Principles

Principles of PBTE Management

The consistent or systematic application of the principles about to be described have proven to be tremendous energy conservers. As we have described the constraints on, and the implications for, performance-based programs, the consistent application of these principles becomes essential to its successful implementation. These four principles are:

1. successive approximation,
2. selective negligence,
3. structure-induced practice, and
4. accumulative feedback effect.

The Principle of Successive Approximation. Instructional systems purists would have us delay full implementation of a program until its many parts and processes have been thoroughly validated through careful pilot testing. For institutions which desire to put their entire elementary and secondary teacher preparation program into a performance-based mode using existing resources, such a validation procedure has little likelihood of success. This is not to deny in any way the value of systematic development, or systematic validation of instruction; nor does it imply that, *given the resources*, ideal models should not be used. While the constraints described prevent us from using a systems approach, they do not prevent us from being systematic.

To better explain this position, consider just one of the basic requirements of a performance-based program--the requirement that objectives be put into a behavioral or measurable form. From an ideal systems view, the ideal objective would have several characteristics. Among those characteristics would be: precise statements of the audience at which the objective is aimed, a performance statement, the conditions under which a student performs, the degree of excellence expected, a discrimination of whether the objective was enabling or terminal, the taxonomic level it represents, the learning type it falls under, and its position in a behavioral hierarchy. Now consider the time it would take for a faculty having limited resources and skills, at the same time carrying on their existing program, to put all of the objectives for the entire teacher preparation program into that ideal form. Would it take, three, perhaps four years?

When one thinks about a comparable amount of time also needed to develop criterion instruments to determine the program effects, then years is not an unreasonable estimate of the time required to validate the entire program. With the mobility of faculties, and the delayed rewards for such efforts, it is indeed improbable that any faculty could be expected to carry out such a program. To further complicate the issue, and given that

a faculty could be pursuaded to continue such extended development over and above their other responsibilities, we really aren't presently able to prescribe what the desired behaviors for effective teaching are, let alone predict what they should be in ten years. The application of the principle of successive approximations offers a way out of this dilemma.

To use this principle, we must indeed be able to define the characteristics of the ideal state of the various elements in our program, and we must also define the characteristics of the state of the elements at the level we are presently able to implement them. Then we must determine the successive steps that we are able to go through, over a period of time, to evolve each of the elements to the ideal condition. That means we set up a time line that indicates when, and by whom, each successive step will be completed. This is quite different from only saying that this is the best we can do now, and that we will improve it later. Many a farmer's temporary fence has continued on long after he has left the scene.

To use our measurable objectives example, a program could begin with the objectives at the best approximation the faculty is able to handle at the time. (That may only be performance statements based on Mager's criteria, or worse.) But *knowing your ultimate goal, you begin at the lowest approximation of your objectives and determine reasonable successive approximations with deadlines and people assigned to complete them.* During the next cycle you might plan to add conditions to each of the objectives, in the third cycle you might plan to add the degree of excellence expected to be met for each objective, and so on. The same procedure can be carried out for criterion instruments. Few members of educational faculties have the necessary psychometric know-how to write valid and reliable test items. But some do know how, and the successive steps that must be gone through to reach the ideal state for test items *can* be predetermined. Other ideal states to which this principle could be applied are materials development, learning strategies, motivational techniques, instructional team relationships, and instructional facilities.

In essence, the application of the principle of successive approximations permit us to start our competency-based program at a level considerably less than ideal. It is important to emphasize, however, that a program of continuous assessment and revision must be set up to insure that the successive approximations are carried out on the basis of hard data. No matter what the initial state of the program, it is bound to change as a result of data related to the program's effectiveness, efficiency, and relevancy. A later section will describe the characteristics of an assessment/revision component which would serve this purpose, and which would also be subject to the principle of successive approximations.

The Principle of Selective Negligence. This concept, sometimes called benign neglect, is not new, but its systematic application is new, as far as we know. It is a valuable means for reallocating energy to important purpose. A fact that has frustrated administrators for a long time is that there is always a sufficient number of tasks commanding their attention to take up twenty-four hours of every day. Some kind of Parkinson's Law is

operating for all of us in education which makes this true, whether we are administrators or not. No doubt the mark of a successful administrator or manager is his ability to be selective among the tasks that constantly compete for his attention. Many of us are trapped into dealing with the trivial among these tasks and confuse our busy-ness with effectiveness. Six trivial ten-minute tasks take up an hour -- ad infinitum.

This principle of selective negligence requires almost the reverse procedure to that of listing priorities. It asks instead that we *continuously identify that which can be neglected because it is either trivial or not important to do at the moment*. For those things that must be accomplished later but not now, the successful application of the principle requires that a time be set for dealing with it, that a deadline be set for accomplishing it, and that responsibility and authority for accomplishing it at that later date be assigned.

When this principle is consistently applied to the components of a management system, it saves literally hundreds of hours. Unfortunately, its use also creates dissonance within the manager of a PBTE program, and often among the faculty who are directly affected by his selective negligence. This is either because of misunderstanding, or because neither the faculty nor the manager really wants to tackle the important tasks, which are usually much more difficult to handle than the trivial ones.

To illustrate the point, consider a problem that often arises for teacher preparation institutions which attempt to move toward a performance-based program -- that of grading. If you recall, when we discussed interface problems earlier, we mentioned that the conventional grading system, which is either arbitrarily determined or based on a norm-referenced grading system, is in conflict with a performance-based system, which only wants to know if a student is competent enough in a prerequisite behavior so that he can now learn the succeeding behavior. Decisions controlling the determination of the grading system usually extend beyond the persons responsible for the teacher preparation program. It is frequently decided for many colleges of education by university policy makers or representatives. To get a "pass, no-pass" option through the creaking machinery of most of our universities could take a long time and consume a great deal of energy.

This is one task that a manager or faculty of a PBTE program could selectively choose to neglect. The rationale for doing so could go, and has gone, like this: "A and I (incomplete) are comparable to pass and no-pass; therefore, I will use those grades of the conventional system to serve the needs of the PBTE program until such time as I can afford the energy expenditure to change the system." But since this is not trivial, it is important to set a time when this will be reexamined, and to assign responsibility for doing so.

Instance after instance of this nature demand attention, but their selective negligence is necessary if resource-poor institutions are to find the energy to successfully implement a PBTE program.

The Principle of Structure-Induced Practice. Basically, the significance of this principle is its power to change negative views toward PBTE to more positive ones that result in constructive involvement in the program.

The initial criticism of this principle condemns it as a behavioristic conditioning technique. Perhaps there is some truth to the criticism, but we think that the larger effect of structure-induced practice comes from the involvement of significant "others" whose opinions and attitudes differ from those of the negative individual. At any rate, it works, even when a faculty member has full understanding of the manager's intent.

Simply stated, the principle advises, *if a person whose attitude towards PBTE is negative or uncooperative, then involvement in a structure with significant others will result in the person becoming more positive and cooperative toward PBTE, and more willing to expend additional energy toward the enhancement of the program.*

Digression Time. We have been able to discern *four major kinds of critics* of the PBTE concept:

1) The first is the one who, frankly, chose university life for reasons other than to be involved with a PBTE program. He is especially concerned with certain restrictions such as the writing of modules that require precise statements of objectives, the necessary compromises required in cooperative team effort, and the involvement with students and public and parochial school colleagues in the field. He agrees that what is being done is important, but it is just not his specialty.

2) A second critic is vocal, we think, because he is afraid. The development of performance-based modules and working with teams reveals a person's level of understanding of his discipline and how it relates to the preparation of teachers. The tendency is to react defensively.

3) The third type of critic is the opportunist or entrepreneur who wants to save his energy for wheeling and dealing. Unlike the first critic, the needs of the university or college are incidental to his needs. His faculty position is primarily a base for outside operations. The involvement in a PBTE program would cut down outside activities drastically.

4) The fourth type of critic is the one whose understanding of the PBTE concept convinces him that PBTE is antithetical to a humanistic philosophy of education. He ascribes to PBTE such characteristics as inhumane, mechanistic, atomistic, and behavioristic. He is sincere, and he is the toughest opponent of PBTE. He is also, in our opinion, a valuable asset to any organization that seeks to insure that its means and ends remain relevant. And of course, depending on the values of the managers and the decision makers of a PBTE program, the results *can be* inhumane, mechanistic, atomistic, and behavioristic.

But PBTE can also be the most humanistic of means. Its great value is

that it makes *visible* what is being done *by* faculty, and *to* students. The demands that all of the programmatic intents be stated in precise measurable terms, and that the criteria for determining whether that intent has been met be public, reverses the eternal guessing game about what is being done to students and society. With the shedding of mysticism and ambiguity, intellegent students and laymen can question the relevancy of what is practiced in the schools. They have had the power to change the curriculum for a long time, but the process has been so hidden, and effects so confused, that most of those affected, including the faculty, haven't known where or how to make meaningful and relevant change.

To give an illustration of how the principal of structure-induced practice might be applied, consider the real example of a faculty member who, for avowed humanistic reasons, was taking a strong opposing stance. This gentleman was also a recognized expert in his discipline. The managers of the developing PBTE program approached him, saying that they understood how he felt about PBTE, but they wondered if he would be willing to work with the instructional development team that was responsible for developing modules in his area, to insure that concepts and skills that he thought were important were included in the modules. He agreed to help the team for a short time, not for the program's sake but for the students' benefit. He did provide important input to the team, but apparently they also had an affect on him. On subsequent occasions when asked to help the team, he indicated greater and greater willingness and eventually became a full team member. His own lucid explanation of why his views changed matched ours. He found, after getting involved and having an opportunity and a willingness to discuss the reasons for the PBTE operation, that most of the differences were "semantic," and that safeguards were possible to prevent misapplication of the systematic techniques necessary to the development of PBTE.

One view is that the team structure, which was a new means for him, had the effect of any new environment -- of providing the opportunity to look at conditions in a different light, and to be receptive to additional information that could legitimately change his view.

The Accumulative Feedback Effect Principle. This principle, which in a sense is a corollary to structure-induced practices, suggests that *if faculty members who are involved with the development or the operation of a PBTE program, no matter how tangentially, are consistently provided appropriate information at the most opportune times, they will be willing to become more and more involved.* The manager must concentrate on the word "appropriate." There is a tendency for managers, when first getting a PBTE program going, to withhold information, fearing what the opposition will do with it. Managers who do this get caught and lose credence with their faculty and students. At that point, the tendency is to overreact and open the information sluice gates, which causes even greater cognitive dissonance. What the manager forgets is that it is really impossible for faculty members or students to handle all of the information pertaining to the program unless they have an equal opportunity to put in the amount of time that the manager has spent in dealing with the data. Given their other commitments, that is not an option for them.

The alternative is to provide faculty and students with the information they need, when they need it, and to be willing to provide any additional information requested. This is difficult and requires several "successive approximations" before the manager sufficiently refines the techniques for doing this with his particular faculty, but it pays off in increased involvement and as a means for maintaining a program's momentum.

In our discussion of the principle of successive approximation, we deliberately avoided giving a precise definition of the principle because of elements within the definition that we were not ready to explain. We would like to correct that omission now by stating the principle thus: *given that an institution interested in adopting a PBTE program is primarily limited to the internal resources and skills presently available to it, if it chooses to develop the entire program by successive approximations consistently guided by the heuristics and the principles of PBTE management, the likelihood of success will be significantly greater than if it follows a classical development model.*

Heuristics of PBTE Management

Scientific, technical, and educational literature use the term *heuristic* in a variety of contexts, and their meanings for the term are often at variance as well. As the term is used here, it refers to a collection of pragmatic rules for program adoption. These rules are derived from change and innovation literature, and from the experiences of those responsible for developing, installing, and maintaining PBTE programs around the country.

There is no significance in the sequence of the heuristics listed below, nor is there any intent to suggest that the list is exhaustive. In fact, as we have progressed through the development and implementation of our PBTE programs, we have continued to add new heuristics, and to modify existing ones. In some cases we have discovered we were mistaken about the usefulness of some heuristics and have stopped practicing them. The ten that we list here, however, have proven useful in a number of different settings.

1. Work within the rules of the existing management system, where possible.

   Often when educators attempt to install an innovative program, they find themselves frustrated by the ponderous machinery of the existing management system. A not uncommon reaction is to break the rules or subvert the system. An awareness of the defense mechanisms that a system accumulates and an examination of history would reveal this to be a highly questionable practice. Most entrenched educational systems engorge and disgorge several "innovations" each year. We should not be surprised at the ease with which educational systems can resist unwanted change. The innovation must be compatible with the overriding system.

2. When the operation of the new system makes changes in the existing management system necessary, use those formal mechanisms for change that are built into the old system, whenever possible.

   In many existing systems such change mechanisms may be rusty with disuse, but they are always there. Often, their change mechanisms are time-consuming to use, but the resulting compatibility between the new and the old will result in considerable time-saving in the long term. Each system has its gate-keepers, and while they are seldom devised to help anyone, they are usually capable of doing a great deal of harm.

3. Do not ask individuals or groups to make decisions when such decisions fall outside of their defined function, or when responsible parties lack sufficient information to make the most appropriate decision -- especially when they have great decision-making power.

   If you do ask for decisions under such conditions, you will surely get them, and it may take you months to get the decision reversed, if it should prove inappropriate. Sometimes it is difficult to determine which decisions individuals or a specific group are best able to make. But, generally speaking, it depends on the level of information that the individual or group has access to. For instance, within a college, deans usually have the best data for policy-making decisions. Because of their responsibilities, they work constantly with information relevant to the effects of policies on related systems, such as the other colleges, the university, state departments of education, or community groups. It would be foolish to make such decisions without getting their full input. It would be equally foolish to ask a dean to make operational decisions for which he has little information, such as what objectives in a specific subject matter should be taught to students, how they should be tested, what instructional activities should be selected to meet those specific objectives, or what kinds of spaces, materials, and equipment are needed to meet those objectives. By the same token, while a group might be very aware of operational needs, they may have little understanding of the interactive relationships and effects of policy decisions.

4. When it is necessary to ask a relatively uninformed group to make decisions, always provide them with one or more model alternatives.

   Canine lovers have often observed the circling process that dogs go through when trying to find a place to lie down. Individuals involved in group process have observed the same phenomenon in the initial behavior of committees or task groups. The process is time consuming, and often results in several false starts before the group settles down to productive work. The provision of alternatives, which treat the major variables related to the

problem for which decisions must be made, has been found useful for reducing the amount of time wasted and the number of false starts. While the alternative finally approved by the group may little resemble the model alternative initially presented by the manager, the focusing power of the model alternative saves untold hours of committee work.

5. Always keep the key elements of a decision or a plan visible to those who are, or may be, affected by the decision or plan.

   Information of this kind is withheld from faculty and students for one or two reasons, usually. Either the manager is not sensitive to their need to know, or he is concerned that their knowledge will in some way reduce his chances of carrying out his agenda. The latter, of course, smacks of Machiavellian manipulation, which few educational program managers are able to carry off successfully. Aside from the moral issue, the educational manager is surrounded by too many bright people, who sooner or later will figure the score, with a resulting loss of credibility and effectiveness for the manager. In addition, the manager cuts himself off from sources of useful data, as illustrated by the following heuristic.

6. Always provide opportunity for input and decision making for those who are, or may be, affected by a developing system.

   The PBTE program that depends on the application of the principle of successive approximation for its improvement, must also depend on its faculty and students' conviction that such a program is worthy, since it will be primarily through their energies that such successive approximations are carried out. Aside from the motivating effect of feeling that what one is doing is worthwhile and that one has a say in the decisions that control the continued development of that program, individuals so intimately involved with the program are sensitive to aspects of the program that managers and more aloof policy makers usually are not, and are thus a source of important information.

   Even so, PBTE managers should be aware that tapping this important source of information requires considerable effort on their part. The usual reaction of the contrite manager who has withheld information important to those affected by it is to overreact and to dump all information on those affected. The result is usually worse than withholding information, because neither faculty nor student can be expected to assimilate all of the data which the manager has available, in the time they have available. The cognitive dissonance created by information overload is so great that often the recipient rejects the whole mass and attempts to disengage himself. The manager's task becomes one of determining the kind and form of information most

useful for a variety of individuals involved in the PBTE program, and to get that information to them. He must also make available any additional information that those affected might require. To set up a communication and information-handling system necessary to meet this heuristic is usually not high priority among most managers. In many cases they lack the skills or patience for setting up such systems. But the techniques and the processes for setting up and running such systems at a number of levels of effective and efficient sophistication are known, and the pay-offs are not only significant but necessary.

7. In beginning a performance-based teacher education program, or a project within it, concentrate managerial energies on interested and willing individuals.

   A frustration that managers often suffer results from their insistence that individuals assume responsibility for tasks which are perceived by the individual as either low priority, or antithetical to his purposes. A far more effective use of the manager's time is to support interested and willing individuals, who will form a nucleus that will attract others as the operation of the program reveals new values. At this point a corollary heuristic is worth stating in spite of the obvious redundancy.

8. Do not press involvement of opposing or uninterested faculty, students, or administrators for short-term gains.

   Instead, accept what willing cooperation is offered and depend on interested individuals for other activities. The practice of the accumulative feedback principle which requires the provision of information at the level of involvement of those opposing or uninterested, will have an accumulative effect of increasing their willingness to be productively involved.

9. Be alert to, and counteract, conversational or behavioral holding actions that are designed to dissipate or redirect your management systems' energies.

   For a variety of reasons, the purposes of a PBTE management system may conflict with those of involved faculty, students, or administrators. Often the reasons for the conflicts are hidden or obscured, but it pays to search them out. Earlier we described four groups among a faculty which tended to resist the implementation of a PBTE program. All four groups may include bright people who are very good at setting up holding actions that reduce the manager's effectiveness considerably. As examples, some cues for possible holding actions are: "I agree with you but . . . ," or "Yes, that's important, but could we do this first . . . ," or "First, I think we should form a committee to study the problem . . . ," or "Why don't you do a small pilot first?" Of particular danger are the mas-

ter parlimentarians among us, who use their superior knowledge of the rules to slant the process in their favor. As stated earlier, such individuals usually resist when they perceive that their positions are threatened, but often such perception is based on limited or biased information. The consistent application of the four PBTE management principles and the other heuristics tend to reduce this problem to insignificant proportions.

10. Keep all interactions among involved faculty, students, and administrators task oriented.

    It is easy to talk, to deny talk, and to substitute talk for action. A manager who permits a meeting to adjourn without determining the next task, who will accomplish that task, and when it will be accomplished has denied the reason for meeting and will find himself doing other people's work. Further, a successful task product is highly motivating to a working group, and very convincing to others whose involvement the manager cherishes.

Again, lest we be accused of providing "words to live by," the heuristics herein described are rules that have proven useful and appropriate under certain circumstances. Their utility should remain accountable to the values and purposes of those legitimizing the PBTE program and should not be viewed as fixed and immutable. Our experience suggests that their application should be out in the open as well. Individuals should be able to counteract the effects of such principles and heuristics if, after they have clarifying information, they feel that the use of a principle or heuristic is misplaced. But more important, for an educational system attempting to set up a relevant, effective, and efficient PBTE program with existing resources, the likelihood of accomplishing that without heavy faculty and student involvement is small. The knowledge of how the system works and where an individual can have maximum input is an important means of stimulating involvement.

The Vital Roles of Continuous Assessment and Revision

The justification for implementing a PBTE program at a low level of approximation rests on the assumption that the program will be steadily *improved* through a series of successive approximations. The program that requires its students to master specific competencies before moving to succeeding competencies is highly dependent on a valid and reliable assessment and revision system.

The basic unit or *microunit* to which an assessment system would address itself in a PBTE program could reasonably be a match among *objectives, strategies,* and *criteria.* That is, each objective will be matched with its

teaching strategy and the criterion items for determining whether the objective has been reached. This PBTE program microunit pins down specific effects of the program. Unlike more conventional programs where specific effects are most difficult to match with their causes, this microunit provides effective direction for determining the causes of both student and program failure. Just as important, the objective-means-criterion match can indicate successes, thereby justifying continued practice. Until a PBTE program can reach the point where its program has established these microunits, it can expect to be beset by capricious and disorganizing change.

We should hasten to say that we are aware that the microunits by themselves do not provide sufficient data for total assessment of the program. The interactions among these microunits will, in all likelihood, result in a whole greater than the sum of the microunits. We recommend a *macrounit* which can accommodate expanding clusters of microunits. This macrounit is the match among *relevancy*, *effectiveness*, and *efficiency*. More specifically, effects of a cluster of microunits are gauged as to their relevancy by comparing the effects with the specified values legitimizing the PBTE program. A cluster of microunits is gauged as to its effectiveness through the provision of terminal objectives for the cluster, and criterion instruments that indicate the degree to which those objectives were met. The flexibility of this assessment model has promise for the larger question of evaluation. We think it begins to create operational, evaluation models such as the CIPP Evaluation Model of Stufflebeam and Hammon. After we have examined a practical structure for this PBTE management system, we will describe some of the operational processes in PBTE assessment and revision components and how they relate to overall evaluation.

Our contention is that, without a similar microunit and macrounit, and that without continuous revision based on the assessment data gained from those units, a performance-based teacher education program is not possible.

Program Interfaces with Related Systems

An interface is the means of control and communication between two or more systems. For example, considering a man and an automobile as our two systems, the interface would include the man's senses, and the ignition switch, the gear shift, steering wheel, and brake pedal of the automobile. It is clear that without that interface a relationship between the two (transportation) could not take place. The interface between man and machine is a major engineering concern; and the effectiveness, efficiency, and relevancy of that relationship depend on the characteristics of the elements of the interface contributed by the two systems. Those responsible for traffic on our highways are much aware of the variance in effectiveness, efficiency, and relevancy of this man-machine interface. The degree of skill in hand-eye coordination and the placement of controls, along with a number of other factors, account for that variance. The problems of this interface are comparatively simple when contrasted with the multiple interfaces among interrelated educational systems and subsystems.

To illustrate this complexity, a PBTE program must interface with the college of education, other colleges of the university, with the public and private schools with which it works, the university budgeting and grading system, the state department of education, professional education associations, and with national government organizations. We say nothing new when we state that the success of the PBTE program depends on how well these interfaces operate.

To use our man-automobile analogy, supposing that the form of transportation that the man had been trained in was a horse and wagon. The interface in this case would again depend on the man's senses and his hands, and also his voice (Whoa, gitup, etc.). The horse would interface through his harness and reins and his auditory perception of voice commands. Consider the problem of this man applying his interface skills and perceptions to the automobile. In effect, this is often the case when an interface is formed between a new PBTE management system and the existing management system which was not designed to facilitate communication and control between itself and the PBTE management system. In essence, the PBTE manager who wants his system to survive must do a careful analysis of the interfaces between his system and those related systems upon which his is dependent. As we study the generalized structures of a PBTE management system operating under the constraints we have set, we will point out a number of the more severe interface problems, and means for correction.

A Model for PBTE Management Structures

Given the constraints and the variables imposed on a teacher preparation institution of limited resources, and our interpretation of the underlying assumptions and implications for application of the performance-based education concept, there are certain generalized structures that appear to be appropriate for PBTE programs. The four structures identified in this model are: *coordination agency, instructional teams, assessment teams,* and *instructional laboratories.*

The Coordination Agency

Recognizing that responsibility for coordination of educational programs may be divided in many different ways, depending on the particular educational organization being considered, the major task of the reader will be to match existing responsibilities of his organization's units and, in those instances where responsibilities are not assigned, to determine the part of his system which could best assume those responsibilities.

Allocation of Resources. Almost invariably, managers of performance-based programs face the problem of integrating their program within a larger existing program. Each existing program will have its own peculiarities and cause unique problems for the PBTE manager. Most of them will have coordinating agencies that concentrate resource and personnel energies in maintaining what already exists, with little provision made for the other PBTE management functions of adoption, design, production, installation, evaluation, and

revision. While the principles and heuristics presented here go a long way toward making more efficient use of the energy available in the system for initially carrying out the management functions, it is important to formalize the functions by including them as budget items, so that resources and personnel may be assigned to those functions.

Getting those functions recognized is not an easy task. However, PBTE programs have certain advantages that conventional programs do not, particularly as higher levels of successive approximation are reached. Managers of such programs are in the position of more precisely defining needs as a result of assessing the micro- and macrounits of the performance-based program. Administrators are not usually able to tell the real needs of the more amorphous conventional programs that depend on incremental budgeting. The gamesmanship that is stimulated by incremental budgeting, along with the fuzziness of proposals for budgetary increases, has set up a reflexive "no" by twice-bitten administrators responsible for allocating resources. The manager of a PBTE program, on the other hand, is able to make very visible his program's needs. He can indicate clearly the resources needed to carry out strategies for accomplishing individual goals or groups of objectives, and he can offer evidence of the previous effectiveness and efficiency of a particular strategy. He can also prove that a strategy needs to be modified or replaced by providing empirical data based on hard assessment evidence.

Most teacher preparation programs are managed and budgeted on the basis of a departmental system. Such systems are largely antithetical to PBTE programs, especially for management systems with the constraints on them as exemplified by the model presented here in this paper. For example, those PBTE programs which incorporate an interdisciplinary team approach will find it difficult to get the necessary funding for their operations through departmental channels. To a large degree, departments are autonomous fiefdoms that actively compete with each other for resources, and the design of departmental structure even encourages competition for resources among members of the department whose professional goals are often in conflict. At any rate, it is questionable whether any program can long survive on the largess of departments. In the last section of this monograph, we attempt to present a practical cost analysis model for those initiating, and continuing, PBTE programs.

Policy Making and Legitimation. In most of the conventional (non-PBTE) programs that we have examined, the function of policy making has been carried out by a few administrators, usually backed up by relatively uninvolved and unprepared legitimizing boards. Without judging the functionality of such an arrangement for conventional educational systems, the inherent constraints on this PBTE management system make it important that other groups within the PBTE system be involved in policy formation. Certainly, if faculty are going to extend themselves to the degree necessary to overcome the "limited resources aspect" of developing a PBTE program, and to move away from the relative security of course teaching at the university to being integrators of content with the realities of the public school world, they are only going to do so if there is an expectation of having a significant input to the policies

that control the new processes. Since many of the conditions necessary to practice and evaluate competencies are found in the field, and since increasing numbers of public school teachers and administrators are involved in the preparing of teachers, we should understand their desire to have a say in the development of policies that affect them. We should also understand their low level of cooperation when they aren't provided a voice in the decision making that determines policy. Finally, and certainly not of least concern, are the teacher candidates themselves. In fact, it appears to be important that any and all who are directly affected by the PBTE program be given a voice in the policy formation for that program. We are not suggesting this for democratic reasons alone but out of the pragmatic fact that maximum energy expenditure on their part is a function of maximum involvement. A resource-poor organization will have to depend much on the effects of intrinsic motivation for the involvement of these several groups. That is, they must perceive the program as worthy for its own sake.

Distributing the System's Rewards. Few organizations have found satisfactory means for distributing promotions, salary increases, or tenure fairly to their members. Theoretically, it should be easier with a competency-based program, but practically it is not. That is, all of the conditions appear to be present for specifying accountability and for determining how effective each member has been in terms of very specific tasks. Unfortunately, there is a conflict between the conditions for using that same assessment data to evaluate faculty. The collection of assessment data regarding the effectiveness, efficiency, and relevancy of the PBTE program is, of course, absolutely essential. Without such data it would be impossible to make useful, systematic changes. But when the collection of that same data can pinpoint the degree of success of the instructional activities of an individual faculty member, there immediately arise a whole host of problems. For one, such a threatening condition would raise the issue of academic freedom. Secondly, if a faculty member is aware that the system's rewards would depend on the outcome of the assessment system, he would be challenged to beat that system, either by joining forces with other concerned faculty to vote out such an assessment system or, if unable to do that, then to control the outcome so that it reports their efforts favorably. The latter can be accomplished in a variety of ways. Teaching to the test is one obvious way.

The success of an assessment system is highly dependent on faculty trust toward the uses to which the assessment data are put. In a later section where we describe a successful system we also suggest ways of maintaining faculty confidence that assessment system results will not be used against them.

We must admit that we see no clear way of equitably and fairly determining how the system's rewards are distributed, while at the same time maintaining the validity of the PBTE program's assessment system. But, the performance-based concept offers some direction. For example, whatever criteria are used to evaluate a faculty member should be public and available to him at the time he accepts the tasks assigned. Since such criteria are rudimentary at present, we can assume that their useful application will also be implemented by successive approximations.

Interfacing with External Systems. A primary purpose of a PBTE coordination agency is to interface with college, university, state, and community agencies for purposes of supporting and maintaining the PBTE program. Here, the agency attempts to reduce points of conflict and to enhance points of agreement. As an example, most colleges of education have part of their program taught by arts and science colleges. It seems that invariably friction results when a college of education goes performanced based, and the college of arts and sciences continues to operate conventionally. There are at least two reasons why this is so. One, the college of education soon discovers that it is in need of more hours when it goes performance based, and the most obvious solution is to reduce the requirements in arts and sciences. Where, as is often the case, arts and sciences departments are budgeted on the basis of student head-count, the loss of students gets their immediate attention and resistance. Second, PBTE tends to produce students who are extremely sensitive to the teaching act. That is, they become very good at recognizing and pointing out appropriate and inappropriate characteristics of the teaching act. In short, they criticize. For many of our colleagues in the arts and sciences, being criticized for ambiguously stated purposes, contradictory instructional strategies, and fuzzy criteria is novel and disconcerting, to say the least.

The state, as a certifying agency, is assuming increasing responsibility for the outcomes of the institutions it supports. It has been attempting to do so under the rubric of accountability for some time now. Unfortunately, the state has not really had a handle by which it could establish educator and student accountability. But the availability of micro- and macrounits, so necessary to performance-based programs, also provides a means for the state to evaluate educational programs without resorting to unsatisfying standardized tests, and without having to prescribe detailed instructional blueprints for educational institutions. The latter is of particular concern to PBTE advocates. They think it would be unfortunate, indeed, if the states should find it necessary to determine a standard set of micro- and macrounits for all similar institutions. While we are uncertain as to what these units should be, we are reasonably sure they should be different for institutions whose problems and populations have their own unique features. At this point in time, perhaps the requirement that educational institutions provide their own micro- and macrounits should be the limit of state mandate. With the evaluative and assessment data generated by these units, we can begin to propose change from an empirical base.

No less important is the coordinating agency's relationship with the community, particularly the community public and private schools wherein novice teachers in a PBTE program must increasingly practice skills and techniques of instruction. In a later section, where the instructional team structure is discussed, some opportunities for interfacing with the community will be pointed out.

Maintaining Subsystem Interfaces. The PBTE program is made up of several groups which require coordination. Among these groups are included: students, instructional teams, team leader groups, assessment teams, field personnel,

and of course, the coordination agency. The manager is responsible for maintaining a communication network within and among these groups which insures that appropriate information gets to them *when* they need it. This, in turn, requires a fairly sophisticated information gathering, storage, and retrieval system. For most programs, such a requirement appears to be an insurmountable obstacle, and certainly electronic data processing is not inexpensive. But, curiously enough, educational institutions collect and store tremendous amounts of information. So the processes of collection and storage have been and are with us, with a vengence.

There are three major problems in information handling: knowing what information to collect, determining how the information should be treated, and determining how to retrieve it in a form useful for the user. There are two types of information systems: those that take in information and deliver it to the user without change, and those that take in information, change it, and deliver the new arrangement to the user. The latter is more useful and generally requires more sophisticated means for its accomplishment.

While most newly initiated PBTE programs will probably have to go with the existing processes for information gathering, storage and retrieval, it is important to know the successive approximations necessary for improvement. Starting at the data input end, this means that very precisely stated job descriptions for individuals in the program must be specified, and that equally precise task descriptions must be specified for the different operational groups in the program. Such descriptions explicitly and implicitly recommend information needed by individuals and groups. A second set of descriptions, called "relational descriptors," describe how each person or group is related to each subsystem. Once a precise statement of these relationships is established, it becomes relatively simple to determine which persons or groups need a particular informational output of a subsystem. Such descriptions also cue the manager as to which form is most compatible for a particular receiver.

Crude as it is, a managerial process which can continuously check the activities of persons and groups in the PBTE program against job descriptions, task descriptions, and relational descriptions can be quite effective in determining *what* information is needed, and *how* the information should be treated so that it will be compatible with the receiver. Besides the obvious problems of developing the descriptors and of setting up data collection procedures, managers of PBTE programs, depending on the principle of successive approximation for improvement, must face the unhappy fact that, as the program evolves, the information needs of persons and groups operating the program also change. This change means that the manager must periodically revise the descriptors if the changing informational needs are to be met. All of this takes time, but we have found that the process becomes less cumbersome as the PBTE program progresses. This is partly because of the involvement of the faculty. Their possession of the descriptors has some of the same effects that providing students with behavioral objectives has. It tends to stimulate them to find ways of solving problems that are most useful for their style of processing. That is, the clarity of the descriptors makes them aware of the

kinds of information they need and allows them to use their own methods for getting it. They are also quick to point out when parts of the descriptors are no longer relevant to their tasks.

This still leaves unanswered the whole question of how a manager facilitates the retrieval of information. The requirements for information storage and retrieval systems vary considerably. A cookbook, a film catalog, a dictionary, a grade book--these, are all examples of simple information storage and retrieval systems. Unfortunately, they have the common limitation of being difficult to change. For a program that is undergoing continuous change on the basis of assessment data, we need a more flexible information storage and retrieval system. In the assessment and revision model discussed in a later section, we will discuss one alternative information storage and retrieval system which most teacher preparation institutions can adopt or adapt to their particular needs.

It is useful at this point to remind ourselves that all of the tasks and informational needs are being considered by the manager within the context of the management components of adoption, design, production, installation, operation, evaluation, and revision. And, of course, each of these components are being subjected to the management functions of planning, organizing, controlling, coordinating, and appraising. The use of such a framework is, of itself, highly generative of information and provides the manager with cues for the use and distribution of information.

Interdisciplinary Teams for Development and for Instruction

Earlier, we said that a performance-based program requires students to demonstrate mastery of explicit learning behaviors by meeting explicit performance criteria. Clearly, an interdisciplinary approach is not the only means for meeting these conditions, but it has a number of advantages to recommend it. First, the close professional association resulting from teaming is affectively reinforcing to faculty responsible for carrying out the demanding tasks of performance-based program development and instruction. Secondly, the approach provides the broader range of expertise required to insure the inclusion of pertinent concepts and processes in program development and instruction. For example, the individualization aspect of performance-based instruction demands a wider range of faculty skills and knowledge, in order to deal with student inquiry needs, than do exposition-oriented instructional programs.

In addition, the team approach provides at least three other advantages. *First*, it provides flexibility. For example, after the instruction of a cluster of objectives -- a module -- is completed, one or more members of the team can be pulled off to immediately revise the module on the basis of the assessment data collected for it, while other team members cover the absent member's responsibilities. In essence, team configuration permits the manager to provide the necessary time for revision, the lack of which has killed or atrophied so many promising programs in the past.

Secondly, the team approach provides a structure for integrating the field experiences with campus instruction. The experience of most PBTE program managers around the country has been that many skills and concepts cannot be tested through paper and pencil instruments, that more and more of the performances must be assessed while the novice teacher is performing with real students in real classrooms. One approach is to have team members act as facilitators in the schools, where the public schools are within driving distance. They can make the arrangements for field experiences for their particular students in particular schools, and they can use public criteria in the form of checklists to provide the student with evaluative feedback regarding his performance. The advantages of using a team member for arranging the field experience are obviously greater than using someone who knows little about the student, the public school, or often the experiences provided the student prior to the field experience.

A *third* advantage of the interdisciplinary team approach is its in-servicing effect on the team members. It is unlikely that institutions depending on internal funds will be able either to hire faculty with the necessary skills or level of skills, or to train their faculty in the necessary skills, prior to implementing their PBTE program. Those institutions that have chosen an interdisciplinary team approach consistently report that the interaction resulting from different views about common instructional objectives has been very instructive to the team members. It has also broken down many of the artificial barriers created by the disciplines. For example, after team members have been operating together for a while, one of the faculty-to-student comments which increases in frequency is, "I don't know, but team member X does. Let's ask him."

The advantage of being able to go to several team members when dealing with a specific learning problem is also highly regarded by students.

Finally, because the team member who is responsible for the student's field experience is so aware of that student's particular combination of needs, he finds it productive to work more and more closely with the cooperating teacher in the field, in order to establish conditions for the desired experiences. We have found that this not only reduces the negative modeling effects of cooperating teachers, who in the past have often not been aware of what was desired in the field experience or the reason behind the field experience, but it also encourages a reciprocating in-servicing of both the cooperating teacher and the team facilitator.

Independent Assessment Teams

Many of us familiar with Henry Brickell's research in New York agree that it is extremely difficult for those responsible for the development or implementation of a program to assess it objectively. Even with the best of intentions, their involvement tends to make them exaggerate successes and to minimize failures, to accept data which support their efforts, and to reject data which do not. Recognizing some of the problems that attend independent assessment teams, we still believe that they are necessary if assessment is to be used optimally.

One of the obvious problems of independent assessment is its potential threat to team members. Their obvious concern that an independent team may apply the wrong or hidden criteria, possibly provided by administrators who are not close enough to the program to see the real problems, is not unfounded. Of equal concern, in a program that improves through successive approximations, is the likelihood that such revealing assessment data will be used for answering tenure, promotion, and salary questions. The kind of assessment program necessary to provide the data for its continous improvement will clearly reveal who was responsible for what segment of the program, and what effect each team member had. But the use of this data for a system's rewards and punishment will greatly curtail or make impossible the continuous improvement of the PBTE program. As soon as it becomes clear that such data will be used to evaluate a faculty member, he will be encouraged to "beat the system" by making the assessment data appear to favor him, whether by teaching to the test, or by an infinite variety of other means at a bright faculty member's disposal. This is in high contrast to the risk-taking behavior that a program depending on successive approximations for its improvement requires.

Those of us who have chosen an independent assessment team have found it necessary to put control of that team's output in the hands of the team members. That is, they decide what kinds of data will be collected, and where the treated data are sent. It becomes a faculty member's decision whether assessment data affecting him go into his promotion file or not. For administrators hungry for a means of evaluating faculty on primary criteria, this is not too satisfying, but for a management model possessing the constraints presented here, such control seems necessary.

Preservice and In-service Instructional Laboratories

If we buy the implication or assumption that a PBTE program will evolve toward an individualized curriculum, with the concurrent reduction of lockstep, mass instruction strategies, then we need to consider the facilities and the function of facilities that complement this change. There are a number of factors which suggest that the use of instructional spaces for an individualized PBTE curriculum makes their management different from the conventional use of instructional spaces.

First, there is the factor of pacing. Our instructional facilities must be prepared to serve the student when *he* is ready for a particular instruction. Secondly, there is the commitment to both preservice and in-service instruction. The large majority of instruction offered is as appropriate to in-service students as it is to preservice students. Certainly the process and facility needs have much in common. For both the sake of increased interaction between preservice and in-service teachers, and for efficiency, a common *teacher center is recommended*. For ease of management it is desirable to have the center in one space, but, for many institutions initiating PBTE programs, it is not immediately possible to command one space for all of the teacher center's functions.

Whether the teacher center is in one space or scattered, the components which make up such a center will be similar. Many of those components or subsystems already exist on most campuses, although their functions are seldom integrated and certainly not designed to serve an individualized curriculum. The *seven subsystems* that we see as *essential* for such a *teaching center* are:

1. *Reference System* - an information storage and retrieval system guiding students to available print and nonprint resources relevant to their area of inquiry.

2. *Resource Section* - physically houses the PBTE program's print and nonprint instructional resources.

3. *Instructional Materials Production Laboratory* - provides equipment, materials and direction for the production of print and nonprint instructional materials.

4. *Learning Programs Laboratory* - provides instruction in understanding and skills through self-instructional programs, seminars, workshops, and institutes.

5. *Microteaching Laboratory* - provides opportunity for college faculty, preservice teachers, and in-service teachers to observe and analyze their own videotaped teaching behavior while interacting with students.

6. *Simulation and Gaming Laboratory* - provides instruction for college faculty, preservice teachers, and in-service teachers through simulation and gaming techniques, and serves as a facility for developing and trying out simulations and games they have developed.

7. *Testing Laboratory* - carries out pre- and post-testing for those modules in the program using objective or subjective tests which require a written or selection response.

Such a center should be distinguished from other learning or curriculum materials centers by its focus on the PBTE program, and its avoidance of accumulating a mass of print and nonprint curriculum materials that are often unrelated and usually retrieved by users only with great difficulty. The materials of a teacher center are integral parts of alternative strategies for reaching specific objectives. The culling or weeding of those materials is based on how effective they are in aiding students to master the program's teaching skills and understandings.

While it may not be necessary to point out the operative features of most of these reasonably familiar subsystems, it might be appropriate to comment on the simulation and gaming laboratory. We see this laboratory assuming a larger portion of responsibility for many of the experiences currently carried on in the field, for reasons of both effectiveness and efficiency. We have found

that many of the events that we would like students to observe or react to may not occur very often or perhaps not at all in the well managed classroom. For example, there are many discipline problems which the cooperating teacher may have cues for that are not yet perceptible to the novice teacher. Indeed, the good teacher often perceives cues indicating potential discipline problems and sets up conditions preventing their occurrence, frequently without the novice teacher even being aware that such a possibility had arisen. Through video or film simulation the novice teacher may see and react to several instances of a particular kind of student behavior in a few minutes, while he might have to spend days or even months in a real classroom to see such an instance.

It is envisioned that all instruction in the PBTE program can be provided through the teacher center combined with field locations.

Evaluation Model

A PBTE Assessment and Revision Model

There is a paradox in education that is hard to explain. It has often been noted that instructional developers may use highly sophisticated techniques in producing instructional programs, only to turn the programs over to management and evaluation systems which are not only outmoded, but in many cases antithetical to the vital processes of new programs. An examination of such a marriage should reduce the wonder regarding the early demise of so many promising innovations. PBTE is a promising innovation that also may fail because of the hostile environment in which it attempts to grow.

There currently exist a few PBTE programs that have implemented assessment and revision components which appear to bridge the incompatible differences between innovative programs and traditional management systems.

While the competency or mastery concept underlying PBTE, in and of itself, can be simply defined, the implications and effects of the concept are far-reaching and complex. Simply put, the mastery concept rules that "a learner must satisfy prespecified performance criteria in order to be certified as competent in a prespecified target performance." Thereafter the plethora of interacting factors tends toward an unmanageable morass. Order is maintained by focusing on two referents: the ideal evaluation system that we are moving toward, and the actual evaluation system that we are presently able to operate. By comparing characteristics of an ideal system with the actual system and noting the discrepancies between them, we are provided a means for analysis. The object, clearly, is to change the characteristics of the actual so that they match those of the ideal.

Initially, PBTE program criteria may have to be based on a bare measurable performance statement in most cases, and in some cases on general objectives, because that is the level that can be attained at the moment, given the constraints on faculty time and skills. But by knowing the ideal characteristics, a structure and a timeline for the "successive approximations"

which would move a program closer to the ideal can be determined.

At this point a small disclaimer is in order. We are painfully aware that our knowledge of learning processes and of the future needs of our students is insufficient for determining *ideal* states of anything. Our experience tells us that what appears to be ideal at the moment may well evolve into something different at a later date. For this reason the criterion of "relevancy" becomes a significant screen for decision making within our evaluation component.

Consider for a moment the necessary conditions for evaluating a program evolving under the constraints of our principle of systematic successive approximations toward an ideal. First, we must have a model or ideal evaluation system in mind; second, we must be able to clearly define the characteristics of our evaluation system as it currently operates; third, we must be able to identify the discrepancies between the current and the ideal; fourth, we must determine specific steps or "successive approximations" that will move the current to the ideal; fifth, a timeline must be set up for the completion of each of these successive approximations; and last, individuals or groups responsible for each of those successive approximations must be identified and assigned responsibility for their completion.

For our purposes here, we have adopted an "ideal" evaluation model. It is called the Hammon-Stufflebeam Evaluation Model, and those who would like a detailed explanation of that model are invited to read Chapter Five of a final report by Dickson entitled Educational Specifications for a Comprehensive Elementary Teacher Education Program (See Bibliography). For the purposes of relating our current "approximation" to that ideal evaluation model, we present the following abstraction that describes key factors in that model.

An Ideal Evaluation Model

First, it is important to know that our ideal model defines evaluation as "the process of obtaining and providing information for decision making." Further, in this ideal model we recognize as necessary and sufficient *four types of educational decisions* for which information is obtained and provided. Those four types of educational decisions are: *planning, structuring, implementing,* and *recycling*. The information needed for each type of educational decision is provided by a *specific kind of evaluation*. That is, *context evaluation* provides information for making planning decisions, *input evaluation* generates data needed for structuring decisions, *process evaluation* serves data needs of implementing decisions, and *product evaluation* provides the necessary information for recycling decisions.

Obviously, the specifications for the four evaluative systems depend on the functions of their respective decision-making type. As implied by their names, each type deals with different but related program decisions. Planning decisions are made when evaluative information (context) indicates that the intents of the program are not being met or, in terms of successive

approximations, are not likely to be met, given the present course. In other words, planning decisions specify the changes needed in terms of the total program. In our model evaluation scheme, constant or continuous monitoring of the overall program is carried out. This means that when the context evaluation results in a planning decision to change elements of the program, the other decision-making types and their respective evaluation components are activated. Data from input evaluation aid in making structuring decisions about factors that can effect the desired change called for by planning decisions. These factors include operational objectives, program strategies, personnel, facilities, organization, schedules, and budget. In effect, these decisions result in a game plan, or alternative plans, for carrying out the planning decisions. Decisions for carrying out that game plan are called implementing decisions. The information for these decisions comes from process evaluation which detects defects in the program operation or design. Finally, decisions to continue, terminate, evolve, or drastically modify an activity are called recycling decisions.

Our ideal evaluation model provides rules and procedures for relating the decision-making processes and evaluation components. The model specifies the range of information required by the different types of information. This information makes clear the kinds of skills, instrumentation, and resources necessary for operating an ideal evaluation model. They are extensive, and they are expensive. Without external resources, it is doubtful that teacher preparation institutions can handle the full implementation of such an ideal evaluation model. For most PBTE programs, it becomes a question of which parts of the evaluation model will be implemented and to what approximation, in order to objectively determine the effects of the program decisions set in motion.

Our strategy for making such tough decisions depends on the following logic. Our PBTE program is designed to facilitate the learning of essential knowledge and skills of effective teaching by novice teachers. We want to know if our selection of essential knowledge and skills of effective teaching are, indeed, the appropriate ones, and we want to know if our novice teachers have acquired those essential knowledges and skills. The question of appropriateness or relevancy of our selection of knowledges and skills as they relate to society's goals, to pupil needs, and to a rapidly changing environment is complex and beyond our objective determination at the moment. Arbitrarily, the initial determination of these knowledges and skills is usually based on the best judgment of a college faculty, of public and parochial school colleagues, and of national consultants. Having arbitrarily selected appropriate knowledges and skills, a college faculty can also arbitrarily determine their learning sequence. This becomes the content frame for the program. For the moment, this may be all that can be done to answer the relevancy question.

The competency or mastery concept governing us requires measurable objectives for those essential knowledges and skills, and public criteria for determining the degree to which students attain them. The basic unit that our evaluation approximation depends on is a three-way match among behaviorally

stated objectives, strategies for accomplishing these objectives, and criterion items that indicate how well those objectives have been met. These microunits not only provide the evaluative data needed at the micro level, but, as discussed earlier, at the broad programmatic level, as well. A comparison among and across these units, when related to the overall goals of the program, will eventually be a source of information for making decisions about program relevancy. We say eventually, because decisions about the relevancy of knowledges and skills of teaching will be speculative until their effects in the environment are pinned down. Given the unequal and interactive effects of technological and sociological evolution, all evaluation systems are indeed at a low level of approximation. Nonetheless, we think that the steps for achieving an ideal model require a sequence where we establish first the effects of our program on the novice teacher, then changes in the pupils of that novice teacher, and finally pupil or citizen behavior in society.

Given this position, we are concentrating on the part of the sequence available to our level of resources and skills. That is, the changes we effect in novice teachers, and the changes they effect in their pupils, with greatest concentration on the former.

Given this focus, our evaluation system must provide data indicating the degree to which the instructional program teaches what was intended, and data indicating the degree to which novice teachers learned the planned knowledges and skills. The data for both of these purposes must be in such a form that their analysis will point to elements of our instructional program that need revision, and to individual student needs not being met by the instructional program.

Evaluation of Student Progress. Perhaps the most effective way of presenting this PBTE evaluation model would be to describe what a student does who goes through its processes. The objective (paper and pencil) pretests and post-tests for each of our modules are housed in the testing laboratory of the teacher center. A student who wishes to take a particular module would go to the testing laboratory and ask to take the pretest for that module. It is worth digressing for a moment to explain that we do not think that assessment of students should be limited to selected response-type tests. Besides selected response tests (e.g., multiple choice, true or false, and matching) we can use more subjectively constructed response tests (e.g., essay examinations or completion types of questions), and we can use performance checklists. Much of the subjectivity is reduced by the necessary requirement that subjective response tests be accompanied by relatively precise public criteria. The performance checklists are also available to the student prior to his performance.

When the student enters the testing laboratory, he may exchange his university identification card for the appropriate test and take the test in a supervised carrel station. If the test is multiple choice or true-false, the student indicates his choices by punching out the appropriate tab in a special IBM punch card or by marking an op scan response sheet devised for

that purpose. For constructed response examinations and performance checklists, one or more of the faculty members on the student's interdisciplinary instructional team uses the same type of card or sheet to indicate how well the student has met the public criteria. These cards or sheets are then put through a special computer program that analyzes the test data for student advisement and module revision purposes. This aspect will be discussed in greater detail later.

After the student has finished an objective pretest, he is given immediate feedback from the testing laboratory assistant. In our view, the ideal pretest is designed to determine whether a student has the necessary entering behaviors to begin a module, to determine the parts or behaviors of the module that the student already possesses, so that he can be entered at the appropriate point in the module, and to determine if a student already has the terminal skills and knowledges taught by the module. If our student lacks entering skills and knowledges, the laboratory assistant may direct him to a prerequisite module or back to the student's advisor. If the student has some of the skills or knowledges taught by the module, the laboratory assistant will inform him regarding the remaining objectives. Since each objective is matched with the specific activities and materials designed to teach it, the student can concentrate on the objectives he has not yet learned and ignore those he has demonstrated in the pretest. Finally, if the pretest indicates that a student has all of the terminal skills and knowledges that the module was designed to teach, then he is directed to the pretest of the next module.

Those students not successfully passing the pretest are directed to the appropriate entering point of the module where they may carry out the indicated learning activities and then return to the testing laboratory to take the post-test, assuming that the test is objective and/or of the constructed response type. If the post-test requires a performance, such as teaching an inquiry lesson, then they are rated by a faculty team member using a performance checklist. This latter type of post-test may be carried out in the field or, in some cases, in a simulation laboratory.

Storing Information of Student Progress. As was mentioned earlier, all of the test data are put on punch cards or op scan sheets and run through a computer program which provides information useful for advising the student and for revising deficient modules. A number of items are included on the IBM cards or sheets, other than test responses: the student's identification number, his advisor's code, the module cluster or course number, the specific module being worked on, the number of estimated hours spent in preparing for a post-test, and a rating by the student of the appropriateness of module objectives and strategies used to teach the objective.

The computer program provides two types of readouts to faculty: one type covering individual students and a second type summarizing results from all students. Information related to a specific student may go to the student's advisor twice weekly, or more often if needed. This readout provides summary data about the number of modules completed to date, and details

about a given student's performance on the current module including pretest results identifying the objectives which he met and those which he did not; and post-test results giving the date or dates the test was taken, the results in terms of specific objectives in the module, comparison with other students in terms of time required for completing the instructional activities, and his attitudes toward the objectives and the strategies employed.

By looking at the first readout, the faculty advisor can begin to determine how to be of assistance to the student having difficulty. He is able to pinpoint the troublesome objective and to examine the activities that the student went through to learn the objective. For example, if he finds that his student only took half the time to prepare for the post-test as compared to the time taken by successful students, this would obviously indicate that the student was spending insufficient time on instructional activities. Those cases where the student's attitudes were negative regarding the objectives or the learning activities would suggest a different approach for the advisor. By pinpointing the objective and the strategies for teaching it, the advisor is either able to offer alternative means for learning the objective, or to direct the student to another faculty member who can recommend alternatives. The advantage of this process is that it prevents the accumulation of error and negative affect by getting to the student quickly with a workable solution to his problem.

The second type of computer program readout goes to the instructional team member or members having primary responsibility for a module. The individual student data going to the advisors are statistically reduced by the computer program so that those objectives which took students an inordinate amount of time to complete are pinpointed. Those objectives are reexamined in terms of relevancy and clarity, and the instructional strategies are inspected for defects. The revision is then completed before the module is recycled. In the recycle, the module is watched carefully to see if the revisions had the desired effect.

More broadly, this second readout is able to point out possible "holes" in the PBTE program. For example, if the previous or prerequisite module was accomplished effectively and efficiently by the students, but meeting succeeding module objectives was very difficult for a majority of students, this could suggest the need for an additional module between the two that would provide necessary additional skills and knowledges needed for the succeeding module. It might also suggest a different sequence for the program's modules.

The two computer readouts described above deal only with data that are collected while the student is in the PBTE program. They do not make use of the myriad of data external to the PBTE program which could be extremely useful in advising students or revising components. Examples of such data are: outcomes of general education courses or courses taken in the arts and sciences college, or university-collected data on student characteristics (age, sex, SAT V, SAT M, high school GPA, etc.). Computer programming which could incorporate such data would clearly be useful. In addition, data should be collected from team members and participating public and parochial

educators about the relevancy, effectiveness, and efficiency of the program components.

Overview of Evaluation Procedures. The intent of this successive approximation of our PBTE evaluation system is to provide data which will aid the effective advisement of our students, and to identify ineffective, inefficient, and irrelevant portions of our program so that corrections can be made. Such an evaluation program must also indicate necessary changes in the program organization and the management of the program, as well as changes in the modules of the program. We think this continuous process of assessment and revision will bring existing evaluation approximations ever closer to the ideal evaluation system and, more importantly, toward a valid and reliable program for preparing teachers.

Additional spinoff effects from the accumulating data bank of this evaluation system are the opportunities for educational research. To be able to compare the effects of relating a variety of student characteristics with a variety of learning strategies, in itself, has great promise for identifying the most appropriate learning strategies for individual learning styles. The research possibilities are limitless, and the direct application of research findings to the improvement of our program is very promising.

PBTE Budgeting and Cost Analysis

A significant portion of this monograph has dealt with the techniques and the procedures by which a PBTE program and management system can interface or become integral with the existing university and college management systems. All of us are aware of the low probability of survival of systems which are "attached" to other systems. One characteristic of an "attached system" is a separate (external) or ill-defined procedure for allocating resources to the system.

Many innovative programs depend on federal or foundation funding for their development and installation and often, to a great degree, for their continued operation. When the external funding ceases, many of these innovative programs become stepchildren of the university or college and, if the level of support they get is an indication, unwanted stepchildren. A PBTE program model like the one described here, with its interdisciplinary instructional teams, is in an unusually precarious position if it depends on departments for its resources. Since such a program draws its personnel from several departments, it would be expected that the resources to sustain a team member would come from his department. However, a salient characteristic of departments is their tendency toward autonomy and their rabid competition for resources. When the PBTE program is a high priority concern of a department, gaining resources to support its personnel in the PBTE program is not a problem. But departments have other priorities, and, when hard times or new interests develop, sufficient resources may not be forthcoming. When this is compounded by several departments contributing to the PBTE program and each debating their fair share to such a tangential program, it creates a nightmare for the manager of a PBTE program. The

problem, then, is to find a way to interface with the existing budgetary structure of the college or university so that the PBTE program's budget needs are looked at as a whole and as an integral part of the existing budgetary structure.

The most popular budgetary systems reported in the management literature at this time are called "Planning-Programming-Budgeting Systems" (PPBS). While each one reported varies from the others in language and procedures, they have a number of commonalities that make them natural and useful for PBTE programs. They are all based on the management-by-objectives concept, and their analysis techniques depend on the detailed kind of data that is required for the functioning of a PBTE program. In this space we can only touch on a few of the several PPBS cost-analysis and cost-effectiveness techniques that are available to managers. Our task here is to present at least one operational solution that can be adapted by most teacher education institutions, whose budgetary structures depend on reporting through departments or department-like structures.

A Strategy for Requesting Resources

The departments in most teacher education institutions either report their budgetary needs to the dean of the college or to some administrative layer between the dean and the departments. For illustrative purposes let us assume that the departments are grouped by division, and that department chairmen send their budget requests to division directors. The plan that we are suggesting would have the interdisciplinary teams or their team leader group submit their budgets directly to the division director. Using the guidelines restricting them, the directors can then form their division budgets with the needs of the PBTE program in mind. To meet the university's need to have the budget couched in terms of departments, the division directors can then distribute the PBTE requests across departments. After the funds are allocated by departments, the division director can internally redistribute the funds for support of the PBTE program into accounts reserved for the PBTE program.

In terms of competing for resources, the PBTE manager may have an edge over department managers. Unlike department heads, it is relatively easy for PBTE program managers to submit a budget based on very specific instructional objectives. The PBTE manager is able to pinpoint by objective the exact strategies planned, the number of personnel to carry out the strategies, and the exact spacial, material, and equipment needs for each activity. There are presently few departments able to provide such convincing evidence of need. In incremental-type budgets presented by most departments, it is easy to hide surpluses, but it is also easy to cut them. Conversely, in a zero-based budget, where every cent is tied directly to a specific instructional objective, it is easy to ferret our surpluses. By the same token it is difficult to cut when the request is justified, because the need is obvious; and the division director or whoever is responsible for the cut is very aware of what is being lost to the program as a result of the cut.

In Appendix I, we include an operational form that is designed for the foregoing resource allocation system. It is entitled "PBTE Program Module Resource Allocation Request Form." On the first page are identifying data and directions for using the request form. On the second page the budget areas (activity, personnel, materials, equipment, and facilities) are broken down and given code numbers. The next page provides space for the identification of budget area needs by objectives. For each objective the manager can indicate the specific activities, facilities, personnel, equipment, and materials needed. For example, let us assume that the objective requires four of the activities coded on the previous page: live lecture (1), self-instruction (6), discussion (3), and field observation (7). The code numbers 1,3,6, and 7 would be written under "activity." The column after the budget areas on this page permits us to indicate the number of some resource where it is appropriate to do so. As examples, after "facility" we could write the number that the space is supposed to accommodate, and after "personnel" we could indicate the number of staff people required to carry out the activities in order to reach the instructional objective.

The last two pages of the form, entitled "Module Resource Allocation Request Totals," are used to summarize by module. This section summarizes the numbers of things and people needed, the time required, and provides spaces for indicating the unit cost and the total cost of items.

No strong brief is held for this particular form, but something like it can logically be used by teams to request resources.

To better illustrate the whole process, we have included in Appendix II, "Resource Allocation Procedure for PBTE Programs," a flowchart that summarizes this particular solution to the PBTE manager's resource allocation problem. It relates directly to the forms in Appendix I.

Final Note

The large majority of the techniques presented in this paper have been used successfully to implement a PBTE program. We question whether all parts of this model can be used successfully at all teacher education institutions, but we are confident that the large majority of the processes, when modified to fit the particular characteristics of particular institutions, will enhance the efforts to successfully manage PBTE programs.

SELECTED BIBLIOGRAPHY

Anthony, Robert. Planning and Control Systems. Boston: Harvard University Press, 1965.

Bloom, Benjamin S., J. Thomas Hastings, and George F. Madaus. Handbook on Formative and Summative Evaluation of Student Learning. New York: McGraw-Hill, 1971.

Boston, Robert E. "Management by Objectives." Educational Technology. May 1972, pp. 49-51.

Buckley, Walter, ed. Modern Systems Research. Chicago: Aldine, 1968.

Cuadra, Carlos A., ed. Annual Review of Information Science and Technology. Chicago: Encyclopedia Britannica, Inc., 1971.

Cook, Desmond L. Management Control Theory As the Context for Educational Evaluation. Columbus: Educational Program Management Center, Ohio State University, 1970.

Cook, Desmond L. The Use of Systems Analysis and Management Techniques in Program Planning and Evaluation. Columbus: Educational Program Management Center, Ohio State University, 1967.

Davis, Ivor K. Competency-Based Learning: Technology, Management, and Design. New York: McGraw-Hill, 1973.

Dickson, George E. et al, Educational Specifications for a Comprehensive Elementary Teacher Education Program. Final Report H.E.W. Project RFP OE-68-4., Toledo, Ohio: University of Toledo, 1968.

Forrester, Jay. Principles of Systems. Cambridge: Wright-Allen Press, 1968.

Gentry, Castelle G., Richard Hersh, and Hughes Moir. Planning for a Performance-Based Teacher Education Program: A Final Report. Toledo, Ohio: University of Toledo, 1972.

Griffiths, Daniel E. Administrative Theory. New York: Appleton-Century-Crofts, 1959.

Griffiths, Daniel E., ed. Behavioral Science and Educational Administration. NSSE Yearbook. Chicago: University of Chicago Press, 1964.

Houston, W. R. and Robert B. Howsam. Competency-Based Teacher Education: Progress, Problems, and Prospects. Chicago: Science Research Associates, 1972.

Hussain, Khateeb M. Development of Information Systems for Education. Englewood Cliffs, New Jersey: Prentice-Hall, 1973.

Johnson, Richard A., Freemont E. Kast, and James E. Rosenzweig. The Theory and Management of Systems. New York: McGraw-Hill, 1967.

Kraft, Richard H.P., and Raymond F. Latta. "Introduction to the Systems Approach in Educational Planning and Management." Educational Technology. February 1972, pp. 5-8.

Lyden, Fremont J., and Ernest G. Miller, eds. Planning Programming Budgeting: A Systems Approach to Management. Chicago: Markham, 1969.

Miller, David W., and Martin K. Starr. The Structure of Human Decisions. New Jersey: Prentice-Hall, 1967.

Moore, Russell F., ed. AMA Management Handbook. New York: American Management Association, Inc., 1970.

Umans, Shelley. The Management of Education. New York: Doubleday, 1971.

Vinsonhaler, John et al. "Computer Management of Instructional Resources." Educational Technology. May 1971.

Wilson, Ira G., and Marthann Wilson. Information, Computors, and System Design. New York: Wiley & Sons, 1965.

Appendix I

College of Education

PBTE PROGRAM--MODULE RESOURCE ALLOCATION REQUEST FORM

Module Number _____ Requested by _____
last name first

Module Title_____

Date of Request___/___/_____
mo. day year

_____

Team Name_____ Term resources needed_____/_____
term year

Course Number _____/____/____/_____
dpt. # course sec. specialty

Directions: In requesting resources for module improvement or revision, fill out two forms (attached):

1. Objective Specification for Module Resource Allocation

2. Module Resource Allocation Request Totals

The first form requires data on individual objectives to be served by the resources of personnel, materials, equipment, space, and activity that are requested. You may find it necessary to fill out more than one of this form. The second form uses the totals from the first form to present the total module needs.

There is a third attachment entitled:

3. Resource Allocation Code,

which includes most of the resources that a team might request. There is an additional space ("Other") after each resource for the listing of items not included in the code. The code numbers before each resource are to be used in completing the first form, "Objective Specification for Module Resource Allocation."

After you have provided the data required at the top of this page and completed the two attached forms, send the request to the Division Directors (Curriculum and Foundations). They will translate your request into cost units and compare the number of cost units with the estimated full-time student equivalents (FTEs) that will be generated by the module. If an adjustment is necessary, they will return the request to you so that you can modify your request to match the resource limit imposed by the directors. After making the necessary adjustments, you would return the request to the directors. If your modifications are in agreement, they will write the requisitions for the indicated resources.

RESOURCE ALLOCATION CODE

Directions: This resource allocation code is to be used with the "Objective Specification for Module Resource Allocation" form. The numbers next to each of the resources should be placed under the resource (activity, personnel, facility, materials, equipment) that you are choosing for a particular objective or objectives. For example, if you decided that you needed a book and a slide/tape, you would place the numbers 1 and 4 under the heading "Materials," as illustrated here:

Materials

1, 4

Activity

1. Live lecture
2. Video lecture
3. Discussion
4. Independent study readings
5. Readings
6. Self-instruction
7. Field observation
8. Field practice
9. Simulation (mediated)
10. Simulation game
11. Other_____
_____

Personnel

1. Faculty
2. Graduate assistant
3. Undergrad aides
4. Other_____
_____
_____

Facility

1. Small college classroom (accommodate 5-20)
2. Large college classroom (accommodate 20-100)
3. Large college classroom (accommodate 100-)
4. Self-instructional laboratory
5. Curriculum materials center
6. Main library
7. Equipment operation lab
8. Instructional materials lab
9. Public school classroom
10. Other_____
_____

Materials

1. Books and/or Journals
2. Handouts
3. Programmed materials
4. Slide/tape
5. Filmstrip
6. Instructional film
7. Production materials
8. Learning package (commercial)
9. Other_____
_____

Equipment

1. Video recorder
2. Video playback
3. Tape recorder (cassette)
4. Tape recorder (reel-to-reel)
5. Filmstrip projector
6. Slide projector
7. Movie projector (16mm)
8. Overhead projector
9. 8mm or Super 8 projector
10. Record player
11. Teaching machine
12. Other_____
_____

OBJECTIVE SPECIFICATION FOR MODULE RESOURCE ALLOCATION

Module Number_____ Requested by_____

Directions: State the objective, or objectives, of this module in behaviors form in the first column on the left. For each objective or cluster of objectives (the latter, only when the activity serves more than one objective at the same time) indicate the appropriate activity, facility, personnel, materials, and/or equipment required by using the code numbers indicated on the attached Resource Allocation Code Sheet.

Objective(s)_____

	Number	Time(hours)	Date(s)
Activity			
_____			
Facility(s)			
_____			
Personnel			
_____			
Material(s)			
_____			
Equipment			
_____			

Objective(s)_____

	Number	Time(hours)	Date(s)
Activity			
_____			
Facility(s)			
_____			
Personnel			
_____			
Material (s)			
_____			
Equipment			
_____			

(NOTE: Add more pages of this form for additional objectives.)

MODULE RESOURCE ALLOCATION REQUEST TOTALS

Requested by:_____ Date of Request:_____
Date Needed:_____

Module Number:_____ Course Number:_____

Module Title:_____

Directions: Sum the data from the Objective Specification sheet(s) for each of the cost factors listed below. Indicate the unit cost (if you know it) of each factor, and the total cost. The total number and times should be adjusted to reflect any overlap among objectives. That is, where two or more objectives are dealt with in the same space at the same time with the same personnel, those numbers and times would only be counted once.

Cost Factors	Total numbers	Time (hrs)	Unit cost	Total cost
A. Personnel				
1. Faculty				
2. Graduate Assistant				
3. Undergrad Aides				
4. Other_____				
_____				
B. Facility				
1. Small college classroom (accommodate 5-20)				
2. Large college classroom (accommodate 20-100)				
3. Large college classroom (accommodate 100-)				
4. Self-instructional lab				
5. Curriculum materials center				
6. Main Library				
7. Equipment operation lab				
8. Instructional materials lab				
9. Public school classroom				
10. Other_____				
_____				

	Total numbers	Time (hrs)	Unit cost	Total cost
C. Materials				
1. Books and/or Journals	____	____	____	____
2. Handouts	____	____	____	____
3. Programmed materials	____	____	____	____
4. Slide/tape	____	____	____	____
5. Filmstrip	____	____	____	____
6. Instructional film	____	____	____	____
7. Production materials	____	____	____	____
8. Learning package (commerical)	____	____	____	____
9. Other_____	____	____	____	____
_____				
D. Equipment				
1. Video recorder	____	____	____	____
2. Video playback	____	____	____	____
3. Tape recorder (cassette)	____	____	____	____
4. Tape recorder (reel-to-reel)	____	____	____	____
5. Filmstrip projector	____	____	____	____
6. Slide projector	____	____	____	____
7. Movie projector (16mm)	____	____	____	____
8. Overhead projector	____	____	____	____
9. 8mm or Super 8 projector	____	____	____	____
10. Record player	____	____	____	____
11. Teaching machine	____	____	____	____
12. Other_____	____	____	____	____
_____				

TOTAL COST OF RESOURCE ALLOCATION REQUEST $_____

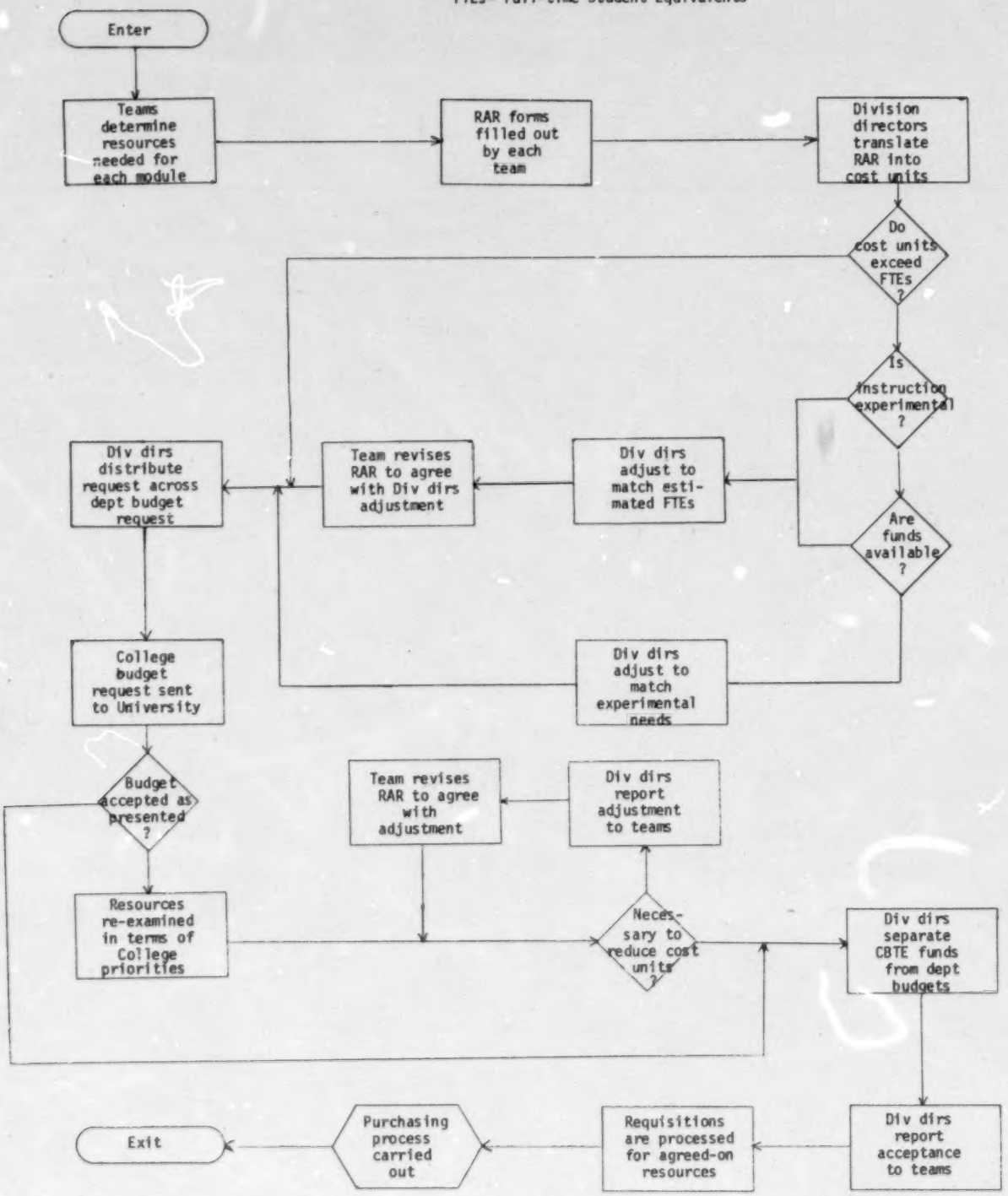
TOTAL COST OF NEGOTIATED RESOURCE ALLOCATION $_____

Appendix II

RESOURCE ALLOCATION PROCEDURE FOR PBTE PROGRAM

Abbreviated Terms

RAR= Resource Allocation Request
Div dirs= Division directors
Depts= Departments
FTEs= Full-time Student Equivalents


Enter
Teams determine resources needed for each module
RAR forms filled out by each team
Division directors translate RAR into cost units
Do cost units exceed FTEs ?
Is instruction experimental ?
Div dirs adjust to match esti-mated FTEs
Team revises RAR to agree with Div dirs adjustment
Div dirs distribute request across dept budget request
Are funds available ?
College budget request sent to University
Div dirs adjust to match experimental needs
Budget accepted as presented ?
Team revises RAR to agree with adjustment
Div dirs report adjustment to teams
Resources re-examined in terms of College priorities
Neces-sary to reduce cost units ?
Div dirs separate CBTE funds from dept budgets
Exit
Purchasing process carried out
Requisitions are processed for agreed-on resources
Div dirs report acceptance to teams

AACTE'S COMMITTEE ON PERFORMANCE-BASED TEACHER EDUCATION

Lorrin Kennamer, Chairman, Dean, College of Education, University of Texas at Austin, Austin, Texas 78712

Patricia Cabrera, Director, Teacher Corps Project, Phillips Hall of Education, University of Southern California, Los Angeles, California 90007

Patrick L. Daly, Vice President of AFT and Social Studies Teacher, Edsel Ford High School, 20601 Rotunda Drive, Dearborn, Michigan 48124

William Drummond, Professor of Education, Department of Curriculum and Instruction, College of Education, University of Florida, Gainesville, Florida 32601

Harlan Ford, Assistant Commissioner of Teacher Education, Texas Education Agency, Austin, Texas 78701

Tommy Fulton, President-elect of Oklahoma Education Association and Art Teacher, Jarman Jr. High School, Midwest City, Oklahoma 73110

David Krathwohl, Dean, College of Education, Syracuse University, Syracuse, New York 73110

Margaret Lindsey, Professor of Education, Teachers College, Columbia University, Box 135, 525 W. 120th Street, New York, New York 10027

Donald Medley, Professor of Education, School of Education, University of Virginia, Charlottesville, Virginia 22903

Gilbert Shearron, Chairman, Elementary Education and Early Childhood Education, 427 Aderhold Building, University of Georgia, Athens, Georgia 30601

STAFF:

Karl Massanari, Associate Director, AACTE, Director, PBTE Project, American Association of Colleges for Teacher Education, One Dupont Circle, Suite 610, Washington, D. C. 20036

Shirley Bonneville, Program Associate, PBTE Project

Brenda Greenhowe, Secretary

Sharon DeVeauuse, Secretary

AACTE'S ADVISORY COUNCIL ON PERFORMANCE-BASED TEACHER EDUCATION

Elbert Brooks, Superintendent of Schools, Metropolitan Schools, 2601 Bransford Avenue, Nashville, Tennessee 37203

Patricia Cabrera, Director, Teacher Corps Project, School of Education, Phillips Hall of Education, University of Southern California, Los Angeles, California 90007

Patrick L. Daly, Vice President of AFT and Social Studies Teacher, Edsel Ford High School, 20601 Rotunda Drive, Dearborn, Michigan 48124

George Denemark, Dean, College of Education, University of Kentucky, Lexington, Kentucky 40506

George Dickson, Dean, College of Education, University of Toledo, Toledo, Ohio 43606

William Drummond, Professor of Education, Department of Curriculum and Instruction, College of Education, University of Florida, Gainesville, Florida 32601

Harlan Ford, Assistant Commissioner of Teacher Education, Texas Education Agency, Austin, Texas 78701

Tommy Fulton, President-elect of Oklahoma Education Association and Art Teacher, Jarman Jr. High School, Midwest City, Oklahoma 73110

William Jenkins, Dean, School of Education, Portland State College, Portland, Oregon 97207

Lorrin Kennamer, Chairman, Dean, College of Education, University of Texas at Austin, Austin, Texas 78712

David Krathwohl, Dean, College of Education, Syracuse University, Syracuse, New York 13210

Margaret Lindsey, Professor of Education, Teachers College, Columbia University, Box 135, 525 W. 120th Street, New York, New York 10027

J. W. Maucker, Vice President for Academic Affairs, Academic Affairs Office, Kansas State Teachers College, Emporia, Kansas 66801

Donald McCarty, Dean, School of Education, University of Wisconsin, Madison, Wisconsin 53706

Donald Medley, Professor of Education, School of Education, University of Virginia, Charlottesville, Virginia 22903

Thomas Santesteban, President, Student NEA, 1201 16th Street, Room 501, Washington, D. C. 20036

Gilbert Shearron, Chairman, Elementary Education and Early Childhood Education, 427 Aderhold Building, University of Georgia, Athens, Georgia 30601

Michael Shugrue, Director of Academic Development and Academic Assistant to the President, City College, City University of New York, New York, New York 10031

Atilano Valencia, Chairman, Department of Education, New Mexico Highlands University, Las Vegas, New Mexico 87701

LIAISON MEMBERS:

Theodore Andrews, Associate in Teacher Education and Certification, New York State Department of Education, Albany, New York 12201. *Multi-State Consortium*

James Collins, Assistant Dean, College of Education, Syracuse University, Syracuse, New York 13210. *National Consortium of CBE Centers*

William Hunter, Principal Investigator of Multi-cultural Education/CBTE Project, AACTE, One Dupont Circle, Suite 610, Washington, D. C. 20036. *AACTE Multi-cultural Education/CBTE Project*

Norman Johnson, Chairman, Department of Education, North Carolina Central University, Durham, North Carolina 27707. *Southern Consortium*

Donald Orlosky, Professor of Education and Associate Director of LTI, University of South Florida, Tampa, Florida 33620. *Leadership Training Institute*

Allen Schmieder, Operations Coordination, National Center for Improvement of Educational Systems, U. S. Office of Education, Room 3115, Washington, D. C. 20202. *National Center for Improvement of Educational Systems*

James Steffensen, Acting Chief, Program Development Branch, Teacher Corps, Room 421, 300 7th Street, S. W., Washington, D. C. 20202. *Teacher Corps*

Emmitt Smith, Research Professor, West Texas State University, Canyon, Texas 79075. *Texas Center for the Improvement of Educational Systems Project*

ABOUT AACTE

The American Association of Colleges for Teacher Education is an organization of more than 860 colleges and universities joined together in a common interest: more effective ways of preparing educational personnel for our changing society. It is national in scope, institutional in structure, and voluntary. It has served teacher education for 55 years in professional tasks which no single institution, agency, organization, or enterprise can accomplish alone.

AACTE's members are located in every state of the nation and in Puerto Rico, Guam, and the Virgin Islands. Collectively, they prepare more than 90 percent of the teaching force that enters American schools each year.

The Association maintains its headquarters in the National Center for Higher Education, in Washington, D. C. -- the nation's capital, which also in recent years has become an educational capital. This location enables AACTE to work closely with many professional organizations and government agencies concerned with teachers and their preparation.

In AACTE headquarters, a stable professional staff is in continuous interaction with other educators and with officials who influence education, both in immediate actions and future thrusts. Educators have come to rely upon the AACTE headquarters office for information, ideas, and other assistance and, in turn, to share their aspirations and needs. Such interaction alerts the staff and officers to current and emerging needs of society and of education and makes AACTE the center for teacher education. The professional staff is regularly out in the field--nationally and internationally--serving educators and keeping abreast of the "real world." The headquarters office staff implements the Association's objectives and programs, keeping them vital and valid.

Through conferences, study committees, commissions, task forces, publications, and projects, AACTE conducts a program relevant to the current needs of those concerned with better preparation programs for educational personnel. Major programmatic thrusts are carried out by commissions on international education, multicultural education, and accreditation standards. Other activities include government relations and a consultative service in teacher education.

A number of activities are carried on collaboratively. These include major fiscal support for and selection of higher education representatives on the National Council for Accreditation of Teacher Education--an activity sanctioned by the National Commission on Accrediting and a joint enterprise of higher education institutions represented by AACTE, organizations of school board members, classroom teachers, state certification officers, and chief state school officers.

The Association headquarters provides secretariat services for two organizations which help make teacher education more interdisciplinary and comprehensive: the Associated Organizations of Teacher Education and the International Council on Education for Teaching. A major interest in teacher education provides a common bond between AACTE and fraternal organizations.

AACTE is deeply concerned with and involved in the major education issues of the day. Combining the considerable resources inherent in the consortium--constituted through a national voluntary association--with strengths of others creates a synergism of exceptional productivity and potentiality. Serving as the nerve center and spokesman for major efforts to improve education personnel, the Association brings to its task credibility, built-in cooperation and communications, contributions in cash and kind, and diverse staff and membership capabilities.

AACTE provides a capability for energetically, imaginatively, and effectively moving the nation forward through better prepared educational personnel. From its administration of the pioneering educational television program, "Continental Classroom," to its involvement of 20,000 practitioners, researchers, and decision makers in developing the current Recommended Standards for Teacher Education, to many other activities, AACTE has demonstrated its organizational and consortium qualification and experiences in conceptualizing, studying and experimenting, communicating, and implementing diverse thrusts for carrying out socially and educationally significant activities. With the past as prologue, AACTE is proud of its history and confident of its future among the "movers and doers" seeking continuous renewal of national aspirations and accomplishments through education.

AACTE'S BOARD OF DIRECTORS

Executive Committee:

William A. Hunter, President and Chairman of the Board, AACTE, One Dupont Circle, Washington, D. C. 20036

George W. Denemark, Past President; Dean, College of Education, University of Kentucky

Sam P. Wiggins, President-Elect; Dean, College of Education, Cleveland State University

Robert B. Howsam, Dean, College of Education, University of Houston

Sister Fidelma Spiering, Academic Dean, Marylhurst College

Edward C. Pomeroy, Executive Director, AACTE, One Dupont Circle, Washington, D. C. 20036 (Ex Officio Member)

H. Kenneth Barker, Dean, College of Education, University of Akron

Dean C. Corrigan, Dean, College of Education, University of Vermont

Pearlie C. Dove, Chairman, Department of Education and Psychology, Clark College

Samuel G. Gates, Executive Director, Trustees of the State Colleges in Colorado

Henry J. Hermanowicz, Dean, College of Education, Illinois State University

Donald Hight, Professor of Mathematics, Kansas State College of Pittsburg

Richard E. Lawrence, Professor of Higher Education, University of New Mexico

Arthur G. Martin, Superintendent of Schools, Moorestown Township Public Schools, New Jersey

Bert L. Sharp, Dean, College of Education, University of Florida

Benedict J. Surwill, Dean, School of Education, Eastern Montana College

Kenneth R. Williams, Chancellor, Winston-Salem State University

Bob G. Woods, Dean, College of Education, University of Missouri-Columbia

Liaison Members:

Dave Darland, Acting Director, Division of Instruction and Professional Development, National Education Association, Washington, D. C.

Rolf W. Larson, Director, National Council for Accreditation of Teacher Education, Washington, D. C.

ABOUT THE TEXAS TEACHER CENTER PROJECT

The AACTE Committee on Performance-Based Teacher Education serves as the national component of the Texas Teacher Center Project. This Project was initiated in July, 1970, through a grant to the Texas Education Agency from the Bureau of Educational Personnel Development, USOE. The Project was initially funded under the Trainers of Teacher Trainers (TTT) Program and the national component was subcontracted by the Texas Education Agency to AACTE.

One of the original thrusts of the Texas Teacher Center Project was to conceptualize and field test performance-based teacher education programs in pilot situations and contribute to a statewide effort to move teacher certification to a performance base. By the inclusion of the national component in the Project, the Texas Project made it possible for all efforts in the nation related to performance-based teacher education to gain national visibility. More important, it gave to the nation a central forum where continuous study and further clarification of the performance-based movement might take place.

While the Texas Teacher Center Project is of particular interest to AACTE's Performance-Based Teacher Education Committee, the services of the Committee are available, within its resources, to all states, colleges and universities, and groups concerned with the improvement of preparation programs for school personnel.

AACTE SPECIAL SERIES ON PBTE

Number of Copies	PBTE Series	
____	#1	"Performance-Based Teacher Education: What Is the State of the Art?" by Stan Elam @ $2.00
____	#2	"The Individualized, Competency-Based System of Teacher Education at Weber State College" by Caseel Burke @ $2.00
____	#3	"Manchester Interview: Competency-Based Teacher Education/Certification" by Theodore Andrews @ $2.00
____	#4	"A Critique of PBTE" by Harry S. Broudy @ $2.00
____	#5	"Competency-Based Teacher Education: A Scenario" by James Cooper and Wilford Weber @ $2.00
____	#6	"Changing Teacher Education in a Large Urban University" by Frederic T. Giles and Clifford Forter @ $3.00
____	#7	"Performance-Based Teacher Education: An Annotated Bibliography" by AACTE and ERIC Clearinghouse on Teacher Education @ $3.00
____	#8	"Performance-Based Teacher Education Programs: A Comparative Description" by Iris Elfenbein @ $3.00
____	#9	"Competency-Based Education: The State of the Scene" by Allen A. Schmieder (jointly with ERIC Clearinghouse on Teacher Education) @ $3.00
____	#10	"A Humanistic Approach to Performance-Based Teacher Education" by Paul Nash @ $2.00
____	#11	"Performance-Based Teacher Education and the Subject Matter Fields" by Michael F. Shugrue @ $2.00
____	#12	"Performance-Based Teacher Education: Some Measurement and Decision-Making Considerations" by Jack C. Merwin @ $2.00
____	#13	"Issues in Governance for Performance-Based Teacher Education" by Michael W. Kirst @ $2.00
____	#14	In process
____	#15	"A Practical Management System for Performance-Based Teacher Education" by Castelle Gentry and Charles Johnson @ $3.00

BILLED ORDERS: Billed orders will be accepted only when made on official purchase orders of institutions, agencies, or organizations. Shipping and handling charges will be added to billed orders. Payment must accompany all other orders. There are no minimum orders.

DISCOUNTS: A 10 percent discount is allowed on purchase of five or more publications of any one title. A 10 percent discount is allowed on all orders by whole sale agencies.

Payment enclosed _____ Amount _____

Purchase Order No._____

NAME_____ _____ _____
(Please print or type)

ADDRESS_____ZIP CODE_____

Please address: Order Department, American Association of Colleges for Teacher Education, Suite #610, One Dupont Circle, Washington, D. C. 20036.

AACTE ORDER FORM FOR OTHER RECENT AACTE PUBLICATIONS

Number of Copies	
	"The Profession, Politics, and Society" (1972 Yearbook)
_____	Volume I and Volume II @ $6.00
_____	Volume I (Proceedings Only) @ $4.00
_____	Volume II (Directory Only) @ $3.00
_____	"Power and Decision Making in Teacher Education" (1971 Yearbook) @ $6.00
_____	"What Kind of Environment Will Our Children Have?" @ $2.50
_____	"Social Change and Teacher Education" @ $2.50
_____	"Systems and Modeling: Self-Renewal Approaches to Teacher Education" @ $3.25
_____	"Excellence in Teacher Education" (Limited Supply) @ $1.00
_____	"Beyond the Upheaval" @ $1.00
_____	"In West Virginia, It Is Working" @ $2.00
_____	"Educational Personnel for the Urban Schools: What Differentiated Staffing Can Do" @ $2.00
_____	"An Illustrated Model for the Evaluation of Teacher Education Graduates" @ $2.00

BILLED ORDERS: Billed orders will be accepted only when made on official purchase orders of institutions, agencies, or organizations. Shipping and handling charges will be added to billed orders. Payment must accompany all other orders. There are no minimum orders.

Payment enclosed_____ Amount_____

Purchase Order No._____

NAME_____
(Please print or type)

ADDRESS_____

_____ZIP CODE_____

Please address: Order Department, American Association of Colleges for Teacher Education, Suite #610, One Dupont Circle, Washington, D. C. 20036.